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A COMPARISON OF LITERATURE-BASED AND CONTENT-BASED GUIDED READING MATERIALS ON ELEMENTARY STUDENT READING AND SCIENCE ACHIEVEMENT

A dissertation submitted in partial fulfillment of the requirements for the degree of Doctor of Philosophy at Virginia Commonwealth University

by

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Acknowledgment

This journey has been a passion of mine in an effort to give back to those whom I love eternally, my family. I have had to work arduously my entire life to be the person I know I am truly meant to be. In the multiple faces of adversity, such as poverty and academic struggle, I have found a way to battle against the statistical outcomes that seemed to be certain. Many believed it was impossible and had doubts that I could make it even half as far as I have come. My journey has brought me to this crossroad. There have been a number of people who have judged and supported my potential and for you I am deeply grateful. To my wife, Tabby, who sees my soul and understands the visions I have for our life. You have never doubted me and have always supported me even when I have been unsure. Without your encouragement, love, and whole-hearted belief, this would have been impossible. To my beautiful children, who despite my preoccupation to this goal have always been great and have filled my life with laughter and hugs. I have loved watching your do your own "wesearch" in mimic of your busy mommy. I love you both. To my father and step-mother, I appreciate your support throughout this process. Your encouragement, love, and belief in my potential have been unwavering.

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Abstract

Guided reading, as developed by Fountas and Pinnell (2001), has been a staple of elementary reading programs for the past decade. Teachers in the elementary school setting utilize this small group, tailored instruction in order to differentiate and meet the instructional needs of the students. The literature shows academic benefit for students who have special needs, such as learning disabilities, autism, and hearing impairments but consideration of academic impact has not been investigated for regular education students.

The purpose of this quasi-experimental study was to investigate the academic impact of the use of content-related (Group C) and the traditional literature-based (Group L) reading materials. During the Living Systems and Life Processes unit in science, two teachers self-selected to utilized science-related materials for guided reading instruction while the other three teacher participants utilized their normal literature-based guided reading materials. The two groups were compared using an ANCOVA in this pre-test/post-test design. The dependent variables included the Reading for Application and Instruction assessment (RAI) and a Living Systems and Life Processes assessment (LSA). Further analysis compared students of different reading levels and gender.

The data analyses revealed a practical but not statistical significance for students in science performance. It was discovered that below level male and female students performed better on the LSA when provided with content-related guided reading materials. As far as reading achievement is concerned, students in both groups had comparable results.

The teachers provided guided reading instruction to their students with fidelity and made adjustments to their practices due to the needs of their students. The content-related teachers utilized a larger number of expository texts than the literature-based teachers. These teachers expressed the desire to continue the practice of providing the students with content-related materials.

Chapter 1

Introduction

Background of the Study

Elementary school teachers in Virginia are faced everyday with the task of preparing students for the Standards of Learning (SOL) assessments given in Reading, Mathematics, Science, and Social Studies. These tests assess the content knowledge and skills students acquire during the school year. Students bring to school their own set of strengths and weaknesses that can affect their motivation and capacity to learn. These factors create a unique set of challenges for the teacher. It is the teacher's responsibility to utilize the most effective methods and materials to ensure that every child is able to retain the knowledge and skills they have acquired.

Teaching reading is a major priority in the elementary classroom, from kindergarten, where students learn the sounds of letters to fifth grade, where students learn to analyze the information they read. The importance that has been placed on learning to read and reading to learn begins in elementary school. The SOLs for the elementary level require teachers to move through a spectrum of reading skills, from concepts of print to cause and effect relationships. Teachers do their best to provide students with a number of opportunities to learn these required skills; however, students learn at different rates, have acquired a different repertoire of strategies, and have specific beliefs regarding their abilities. Due to all these factors, teachers must provide a range of instruction. Reading is not a "one size fits all" content area and

teachers must use different strategies that are research-based and are considered to be "best practice" in efforts to progress every child to meet or exceed the standards.

Through professional development, such as personal reading, workshops, and coursework, teachers learn new strategies and methods that are implemented in their daily instruction to facilitate effective learning for every student. Literacy learning as developed and described in books written by Fountas and Pinnell in 1996 and later in 2001, have been an ongoing initiative for school systems across the country. The framework of literacy learning includes a number of components which focus on reading and writing elements. In each of these components a teacher provides varying levels of support to the students in order facilitate each child's learning process. All of these components are critical for students to develop reading proficiency and independence.

Overview of the Literature

Literacy instruction. Historically speaking, reading instruction has undergone shifts in pedagogical thinking. Research into reading instruction discovers challenges facing students and attempts to improve the situation by providing teachers with new instructional focuses. The early focus in the 1800's was on reciting words from a primer intended to produce eloquent speech and strong moral fiber (Sears, 2006). Reading instruction has come a long way to basal readers that use multiple types of text, including both narrative and expository as well as curriculum related texts. The focus

today is on balancing all the necessary components of literacy in an effort to produce readers who can function in society.

The balanced literacy framework utilized for today's reading instruction incorporates a dispersal of teacher support and student independence. Fountas and Pinnell (2001) have suggested a model for reading and writing instruction that includes whole group teacher instruction, reading and writing workshop, small group instruction, and independent student reading and writing. This continuum provides the students with the necessary support for improving their skills and strategies for becoming more proficient readers and writers.

Guided reading. Guided reading is a key component within the literacy framework where the "teacher supports each reader's development of effective strategies for processing novel texts at increasingly challenging levels of difficulty" (Fountas & Pinnell, 1996, pg. 2). The purpose of this format of instruction is to provide students the opportunity to develop their reading problem solving strategies, construct meaning using these strategies, and ultimately, to use those strategies independently. Guided reading is considered to be one of the most important and popular contemporary reading instructional practices in the U.S. (Fawson & Reutzel, 2000; Iaquinta, 2006).

Students are grouped based on their instructional reading level, interest, or needs in order to provide them with individualized or tailored instruction. Researchers and experts in the area of guided reading favor the use of dynamic or flexible grouping (Caldwell & Ford, 2002; Diller, 2007; Fountas & Pinnell, 1996; Iaquinta, 2006). Flexible

groupings provide versatility to the teacher's instruction and allow students the opportunity to work with different classmates who require the same instruction.

After the flexible groups of children are established, the group is matched with texts that could include a variety of text formats that provide a challenge for the students but allows for an appropriate level of teacher support (Fawson & Reutzel, 2000; Fountas & Pinnell, 1996; Rief & Heimburge, 2007). The purpose of the reading materials is to facilitate the teacher's lesson objective. This instruction meets the state standards required at each grade level, scaffolds the students to reach or exceed their academic potential, and provides the students with instruction on reading strategies that will assist them in becoming more independent readers. Guided reading is not the end all instructional approach and should be used in conjunction with other balanced literacy approaches. Clearly, guided reading is a beneficial instructional approach that provides students with differentiated, tailored instruction. It is crucial to improve the reading skills and strategies of students in the elementary setting and will provide students with successful reading experiences.

Types of text. As the state standards become more rigorous and adapted to include other types of text for reading comprehension, students are required to be able to understand both narrative and expository texts. Narrative and expository texts have their own structural characteristics which require students to utilize different reading strategies and skills. In the elementary school setting, students are exposed to both text structures. Research indicates that narrative texts are most often utilized for reading instruction (Duke, 2002/2003; Yopp & Yopp, 2000) and expository text is

utilized separately as textbook instruction for science or social studies. Understanding the structural features of narrative and expository text will increase awareness and necessity of both texts.

Based on the research of Duke, the use of informational or expository text is rarely used in the elementary school setting (2000 & 2003). With the lack of informational text being used in the elementary classroom and the need to provide students with materials that meet the state standards and their individualized needs, what are teachers to do? The integration of reading and writing skills into other areas of the curriculum and vice versa could infuse expository text structures that are desperately lacking in today's elementary classroom. Research and scholarly suggestions recommend the increase of integrating the reading and writing standards into other content areas (McKee & Ogle, 2005).

Integration of science and reading. The shared content and skills reflected in the standards suggest the potential for integrating these topics to provide students with the pertinent reading instruction and critical thinking skills necessary for understanding scientific concepts. There are a number of commonalities between the learning standards for the content areas and language arts (McKee & Ogle, 2005; Virginia Department of Education, 2003a, 2003b). With such strong connections in the curriculum, a teacher could easily teach reading skills while reading a content-related informational text during a science lesson. Royce and Wiley (2005) found that integration of science and reading increases science and reading achievement to significant levels over that of students who have been taught the subjects separately.

Therefore, if the achievement in these content areas increases through the integration of science and reading, it makes sense to implement integrated instruction.

In the elementary classroom, time is a valuable commodity. With a limited amount of time in the school day, teachers need to make critical decisions regarding their instructional time. The majority of the time allotted in the school day is devoted to reading and mathematics instruction and time for social studies and science instruction is often pushed aside (Harvey & Goudvis, 2007). With short amounts of time being devoted to science and social studies, a teacher must find more creative means for providing the students with adequate exposure to the curriculum. With research identifying a lack of expository text use in the classroom, the lack of time being allotted to the content areas of the curriculum, and the tremendous link between the standards, integration seems to be the only means to make it all possible. Authors, scholars, and researchers in these areas have provided a plethora of strategies for integrating informational text, content area curriculum, and the language arts together. Due to this time limitation, "many teachers have begun to double-dip, using their literacy block to integrate content into their literacy time" (Rief & Heimburge, 2007, p. 4). Fredericks (2003) describes his model for teaching guided reading using science-related literature. He presents a five step process or model for teachers to use that fuses the guided reading framework of Fountas and Pinnell (1996) with the addition of science extension. The description of actual examples from teaching lessons using this guided reading model shows the feasibility of integrating science into guided reading instruction. Utilization of content-based reading materials during guided reading

instruction would enhance the content being learned in science as well as develop understanding of reading informational text.

Rationale and Purpose of the Study

A review of the literature in this area includes a number of articles and resources that address the concerns of guided reading instruction and includes studies of the effects of using small group instruction on reading performance for specific subgroups of student populations. There has also been significant research on the topic of science or social studies instruction, such as inquiry-based teaching and integration of reading into the content area to increase student achievement. However, the literature is sparse on the impact of the use of guided reading and the link between the materials used during instruction and student achievement. A gap exists in the literature in this area. One might suggest that repeated exposure to the content area curriculum could aid in the knowledge retention of that material; however, there are concerns about the potential effects on reading achievement and the acquisition of reading skills.

The purpose of this study is to compare the use of content-based and literature-based guided reading materials on both reading performance and science achievement. Narrative and expository text, poetry, magazines, newspapers, and novels would be included as both types of materials. Content-related materials focus on a portion of the science curriculum as part of the reading experience. Literature-based materials, the more traditional material used, would not specifically pertain to this area and would be selected primarily for the reading skill being taught.

Research Questions

The research questions in this study will be as follows:

1. To what extent does guided reading instruction using content-based reading materials influence the students' knowledge retention in science in comparison to the use of literature-based guided reading materials?
    1.1. How do the materials used affect science performance for students of different academic levels?
    1.2. Is there an effect on science performance based on gender?
2. To what extent does the use of content-based reading materials affect the students' reading performance in comparison to the use of literature-based guided reading materials?
    2.1. How do the materials used affect reading performance for students of different academic levels?
    2.2. Is there an effect on student reading performance based on gender?
3. To what extent does a teacher's guided reading instruction change based on whether they use content-based reading materials as opposed to the use of literature-based guided reading materials?

Design and Methods

To answer these questions a quasi-experimental design was utilized to investigate the academic impact of using content-based or literature-based guided reading materials for small group reading instruction. This quantitative research

identified the effects of different types of materials on student achievement in both reading and science. Teachers at one school located in a suburban community in northern Virginia participated in this study. During the designated science unit of Living Systems and Life Processes, two of the teacher participants provided their students with science-related materials during their guided reading instruction while the other three teacher participants provided the traditional literature-based materials. The science instruction remained unaffected by the implementation of these materials. The researcher used a pre-test, post-test design as a means of determining if significant differences existed between the two groups for overall performance in reading and science. Secondary analysis was examined for reading level performance and gender differences for the material types. The teachers completed a pre- and post-test survey providing information about their guided reading practices. Observations of guided reading instruction were also conducted by the researcher.

Definition of Terms

Balanced literacy –It is a philosophical orientation that assumes that reading and writing achievement are developed through instruction and support in multiple environments by using various approaches that differ by level of teacher support and student control (Frey, Lee, Tollefson, Pass, & Massengill, 2005).

Basal reading programs – comprehensive core reading programs produced by educational publishers which include fiction and non-fiction stories and target the following core instructional elements: phonemic awareness, systematic explicit phonics, fluency, vocabulary, writing and text comprehension ("Basal Reading Programs").

Content-based materials – leveled reading materials used during guided reading instruction that connect the science, mathematics, or social studies curriculum to the Virginia Standards of Learning for English.

Dynamic grouping – flexible groupings of students that are changed and adjusted frequently throughout the school year based on the individualized needs of each student (Fountas & Pinnell, 1996).

Expository text – text that presents factual information related to one topic that includes one of the five common structural patterns of description, sequence, comparison, cause and effect, and problem and solution (Tompkins, 2002).

Guided reading – is a context in which a teacher supports each reader's development of effective strategies for processing novel texts at increasingly challenging levels of

difficulty where the teacher works with a small group of children who use similar reading processes and are able to read similar levels of text with support (Fountas & Pinnell, 1996, p.2).

Homogeneous grouping – a small group of students who all require the same skill, strategy, or concept (Fountas & Pinnell, 1996).

Integration – the link between language literacy and science literacy easily enables teachers to better achieve their goals and to adhere to standards within the time frame they have available by bringing both literacy and science together in one activity (McKee & Ogle, 2005).

Life Processes – Students will compare and contrast the physical and behavioral characteristics of different animals that allow the animals to adapt and respond to life needs. The students will describe specific examples of how animals gather food, find shelter, defend themselves, and rear young. The concepts of hibernation, migration, camouflage, mimicry, instinct, and learned behavior are specific ways in which animals respond to their environment. It is intended that students will actively develop scientific investigation, reasoning, and logic skills (3.1) in the context of the key concepts presented in this standard (Commonwealth of Virginia, 2003).

Literature-based materials – leveled reading materials used during guided reading instruction that address Virginia Standards of Learning (2003a) for English that are not specifically connected to other areas of the curriculum.

Living Systems – This standard focuses on student understanding of the food chain in water and land environments. It focuses on the types of relationships among living things and their dependence on each other for survival. The strand focuses on the life processes of plants and animals and the specific needs of each. The major topics developed in the strand include the basic needs and life processes of organisms, their physical characteristics, orderly changes in life cycles, behavioral and physical adaptations, and survival and perpetuation of the species (Commonwealth of Virginia, 2003).

Narrative text – text that presents either fictional or non-fictional structural elements which include plot, such as problem and solution, characters, setting, and other elements which interact with one another to produce a story (Tompkins, 2002).

Phonological Awareness Literacy Screening (PALS) – The Phonological Awareness Literacy Screening (PALS) provides a comprehensive assessment of young children's knowledge of the important literacy fundamentals that are predictive of future reading success. PALS assessments are designed to identify students in need of additional reading instruction beyond that provided to typically developing readers. PALS also informs teachers' instruction by providing them with explicit information about their students' knowledge of literacy fundamentals (Invernizzi, Meier, & Juel, 2011).

Reading for Application and Instruction (RAI) – a county-wide assessment used as an indicator of reading achievement where students read a series of passages and

answer multiple choice questions related to different aspects of reading such as character analysis, cause and effect relationships, and inference.

Chapter 2

Literature Review

Method for Review of the Literature

The search strategy utilized for this review of the literature involved electronic and reference searches. Searches were conducted through electronic databases including EBSCO Host, ERIC, and Academic Search Complete. Combinations of key words were used in each search database in efforts to find the most relevant sources for this study. Specific key words used included *reading, balanced literacy, reading instruction, guided reading, informational text, narrative text, science, science instruction, academic achievement, and integration*. Additional terms were included in conjunction with the above terms in efforts to narrow the search results to the parameters of this study which included *elementary, reading, science, study, and research*. Searches using the above key words were also utilized through Google Scholar to widen the types of documents being selected including books, articles, and other text formats. Specific searches were also conducted by reviewing the reference lists of relevant articles. Sources related to these key words yielded approximately 1000 references. References involving reading instruction in middle school, high school, or adults were vetted due to relevance to this study. A few middle school related studies were included in the literature review due to the use of science and reading integration techniques. The resources for elementary school subject integration studies was extremely limited and thus, had to be expanded to include middle school generated

studies. Research studies that did not follow the rigor of the standards for quality reading research were also eliminated from the compiled sources. After reading abstracts, reviewing the table of contents, and determining relevance for this study, 79 articles and eleven books were deemed appropriate for review.

Literacy Instruction

Historical foundations. Reading instruction began during the colonial period of the United States. All students read the same text created to teach moral structure as well as reading conventions. Children read aloud by reciting the words from this early primer focusing on pronunciation and eloquent speaking performance. The function of reading and reading instruction was to improve speech and articulation as well as introduce the spiritual understandings of the church. In the late 1800's and early 1900's, the focus of reading instruction began to shift to the development of an appreciation and permanent interest in literature (Sears, 2006). In the 1920's, the term "reading" began to be redefined as a process of thought manipulation and the focus of reading instruction changed to the development of reading comprehension. After World War I, the shocking discovery that American soldiers could not read well enough to follow printed instructions pushed the concern of reading instruction to the forefront of educational research.

In the 1930's, remedial reading programs began and the attention of reading instruction focused on individual student needs and interests. Just a decade later, the basal readers provided to teachers included a variety of reading contexts. The

"Learning to Read" program was the first of its kind to incorporate cross-curricular topics, such as social studies and science texts into the realistic stories and informational text selections provided to students (Smith, 2002). After all the attention in the country to support and strengthen reading instruction, research in 1955 provided tremendous criticism of instructional reading programs. It was discovered that 80% of non-readers in America were boys (Sears, 2006) and once again reading instruction had failed the students in this country. The focus of reading instruction in the sixties and seventies was on giving all students a chance to become successful readers. The federal government became involved in this initiative by creating Title I and providing schools with federal money to support instructional needs. Durkin (1979) conducted a study where she observed classroom reading instruction and found that teachers taught comprehension less than one percent of the time. Studies of classroom instruction discovered the focus on instruction was on word recognition and not on comprehension of the subject matter. A new direction of reading instruction became geared toward comprehension during the eighties and nineties (Sears, 2006). After a century of reading research, investigating the processes of reading and the areas of deficit, reading instruction has become focused on being balanced, to include word recognition, comprehension, writing, student interest and needs, as well as reading in the content areas.

Balanced literacy framework. Literacy instruction has undergone a number of transformations as the understanding of the reading process and student learning has been researched. The focus of literacy educators at this point in history is to

balance the components of literacy instruction and infuse the curriculum into a cohesive modality of instruction that is suited for all levels of learners. Comprehensive literacy instruction:

- Incorporates evidence-based practices that suit the needs of the students in whole-group, small-group, or individualized instruction
- Builds on the students' prior knowledge or schema
- Emphasizes meaning making and comprehension through open and collaborative activities that require critical thinking
- Acknowledges the reciprocity between and within reading and writing (Gambrell, Malloy, & Mazzoni, 2011).

Reading and writing instruction support one another in a cohesive synthesis of instruction and practice. The goal of balanced literacy is to combine a balance of student-center activities and teacher-directed instruction, including the modeling of skills, strategies, and processes (Frey et al., 2005). All balanced literacy instruction provided to students will range on a continuum of involvement from a high level of teacher involvement to a high level of student involvement (Figure 1). This tiered support gives children the opportunity to:

- develop as individual readers
- process new texts
- develop reading strategies so they can read increasingly difficult texts independently
- have enjoyable, successful experiences in reading for meaning
- develop the abilities needed for independent reading

- learn how to introduce texts to themselves (Fountas & Pinnell, 1996, p. 1-2).

All of these components are critical for students to develop reading proficiency. Research of effective reading instruction in exemplary elementary classrooms conducted by Allington (2002) found that extensive reading practice provided students with the opportunity to consolidate the skills and strategies taught by the teacher. These students who outperformed their peers in other schools "did more guided reading, more independent reading, more social studies and science reading than students of less effective classrooms" (p. 3). The key is extensive reading opportunities. It is also important for the students to have opportunities to read a variety of materials other than books, so they may obtain the survival reading skills needed in their everyday and future lives. Students need enormous amounts of successful and meaningful reading, which includes accuracy, fluency and understanding in order to become proficient and independent readers (Allington, 2002; Rief & Heimburge, 2007; Short, 1999).

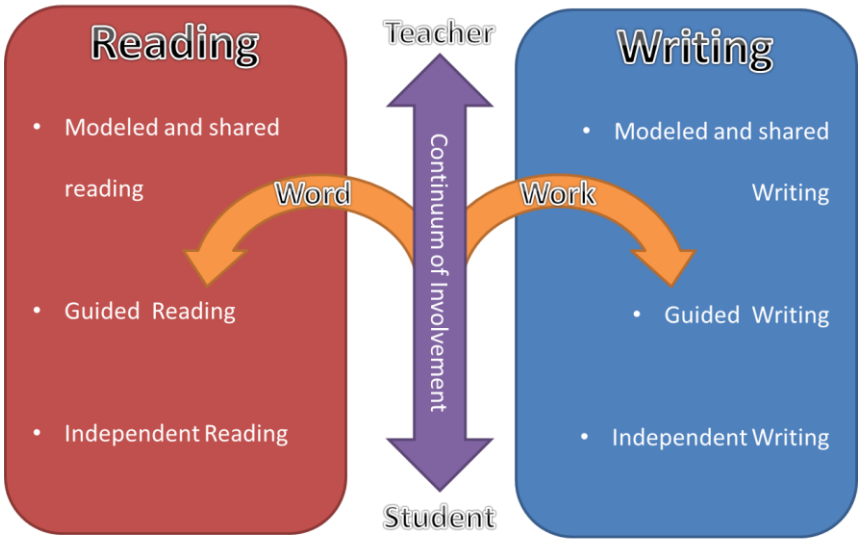


Figure 1: *Flow Chart of Balanced Literacy Components*

Teacher directed instruction to the whole class would be at the highest level of the continuum. At this end, the teacher provides the students with instruction that will foster increased independence, model effective reading or writing skills, and present the standards as required by the state. It is an integral part of effective balanced literacy instruction to have teacher-directed instruction where the teacher models (Fountas & Pinnell, 1996) and provides explicit demonstrations of skills and strategies (Allington, 2002; Gambrell, Malloy, & Mazzoni, 2011). This teacher directed instruction begins with whole class modeling of a skill such as narrative elements of fiction. The teacher reads a picture book aloud to the class while illuminating the characters, setting, problem, and solution of the story. The students enjoy the story and are beginning to make connections to their established schema regarding story elements. The students are actively engaged in the reading process with the highest level of teacher support. The teacher modeling assists all students to see exactly how to process text. In a lengthy study of exemplary first and fourth grade teachers across six states, Allington (2002) explored the literacy instruction through observation of the teachers' instruction and interviews of both teachers and students. The study focused on the active instruction of the teachers through modeling and demonstration of useful strategies that good readers employ.

> The exemplary teachers in our study routinely gave direct, explicit demonstrations of the cognitive strategies that good readers use when they read. In other words, they modeled the thinking that skilled readers engaged in as they attempt to decode a word, self-monitor for understanding, summarize while reading, or edit when composing. (Allington, 2002, p. 5)

At the center of the continuum, is an equal distribution of teacher scaffolding and student involvement provided in teacher guided groups (Figure 1). Students meet with the teacher in a small group to read a teacher-selected text. The instruction provided to the students is minimal and strategically focused on a specific skill needed for those students. Students are reading the text with support from the teacher. Guided reading groups are homogeneous groupings of students who "read at the same level, demonstrating similar reading behaviors, and share similar instructional needs" (Fountas & Pinnell, 2001, p. 17). The groups are dynamic and changing depending on the skills and needs of the students. The teacher will provide the students with explicit instruction on effective strategies for processing texts including both fiction and nonfiction.

Consider this scenario. The teacher calls over five students to read a lower leveled narrative text about children who are waiting for their father to return home from a business trip. The teacher's focus is to reinforce the lesson taught to the whole class concentrating on the character development in the story. This group needs repeated exposure of the skills taught during the teacher's mini-lesson. After each of the students had time to read to the teacher's designated stopping point, the teacher stimulates conversation about the boy and girl in the story. The students would be guided through an analysis of the two characters and how they responded to the situation in the story. This small group instruction could also be focused on writing as well. In this case students would be working on writing with guided support from the teacher. These short instructional sessions focus on the writer's craft and conventions

of writing to improve the students' usage of the components of writing (Fountas & Pinnell, 2001). The students in these guided writing groups also have specific needs and the instruction is tailored to meet those writing needs. For example, the teacher has a small group write letters to pen pals from another state. This group is struggling with organization, so the teacher provides assistance to this group on organizing their thinking using an outline. The teacher scaffolds the group by adding suggestions and explaining the process of writing an outline. For both guided reading and guided writing, the groups are later re-formed for a new purpose. Working on words would be an important component to the guided instruction as well. The teacher would provide support to students on decoding and phonics as they read and write. Students learn how to read the words on the page, gain meaning from what is conveyed by the author, and communicate their thoughts about what is understood. It is the infusion of both the skills-based and meaning-based approaches which joins the emphasis of phonics and reading comprehension to create balanced literacy.

At the other end of the continuum, students are independently reading and writing efficiently utilizing what they have learned about these processes. Students are independently capable of processing new information found in text and communicate their thinking either written or orally. Independent reading is just that, students selecting the text themselves and reading it without any assistance from the teacher. Ferguson and Wilson (2009) noted that students need to be able to process in a variety of personally interesting texts at their independent level and practice the skills and strategies taught previously to the whole class. Short (1999) states that "students need

opportunities to learn language by reading extensively, to learn about language by reflecting on their reading strategies and literary knowledge, and to learn through language by using literature to inquire about the world and their lives" (p. 132). In the balanced literacy classroom students may be writing at their desks or at designated stations, reading on pillows or in comfortable chairs, having literature discussions with a partner or small group, or may be conducting self-guided investigations of literature (Fountas & Pinnell, 2001). When students are at the highest level of the continuum, they are directing their learning and are capable of doing so independently without support from the teacher. The teacher may conduct conferences during this time in order to check in with the students' learning and assess the students' needs. These conferences will provide the teacher with new teaching points for whole group or small group instruction. "According to researchers, a successful balanced literacy program includes direct instruction and modeling of skills, strategies, and processes and student-centered reading and writing activities" (Frey, et al., 2005, p. 278). In order to achieve the goal of the balanced literacy framework, Frey and colleagues suggest that teachers should provide students the following:

- Emphasize reading, writing, and literature by providing long, uninterrupted periods of successful reading everyday
- Create a positive, reinforcing, cooperative environment in the classroom
- Set high but realistic expectations for all students
- Integrate reading and writing thoroughly across the curriculum (p. 273).

Literacy learning as developed and described in books written by Fountas and Pinnell (1996 & 2001) have been an ongoing initiative for school systems across the

country. A comprehensive or balanced literacy framework consists of three major components within the continuum of teacher and student involvement. The three components of literacy include language and word study, reading workshop, and writing workshop. The workshop format provides students varying levels of differentiated instruction to support and improve the strengths and weaknesses of learning. Language and word study offers students opportunities to explore high-quality mentor texts to gain a deeper understanding of language construction which becomes an integral part of oral language, reading, and writing. Working with words becomes an integrated component of the daily workshop activities. Reading workshop provides students with opportunities to read in different levels of scaffolded instruction in order to make meaning of the text and become more proficient. Writing workshop provides students with the opportunity to "think, plan, compose, revise, and share their work" (Fountas & Pinnell, 2001, p. 19). During the reading or writing workshop time, students may be reading and writing independently, meeting with the teacher during guided groups or conferences, or meeting with a small group of students in a literature study or writing investigations.

Guided Reading

As a main component along the involvement continuum within the balanced literacy framework, guided reading has become a staple for elementary reading instruction. Guided reading has been a part of the classroom reading instruction in elementary schools for the past 50 years (Ford & Opitz, 2011; Fresch, 2007) and is

considered to be one of the most important and popular contemporary reading instructional practices in the U.S. (Fawson & Reutzel, 2000; Ferguson & Wilson, 2009; Fountas & Pinnell, 1996; Iaquinta, 2006). Guided reading is where the "teacher supports each reader's development of effective strategies for processing novel texts at increasingly challenging levels of difficulty" (Fountas & Pinnell, 1996, p. 2). The purpose of this format of instruction is to provide students the opportunity to develop their reading problem solving strategies, construct meaning using these strategies, and ultimately, to use those strategies independently. Ford & Opitz (2008) developed a list of eight commonalities of guided reading instruction that are core to understanding and implementing effective guided reading instruction which include:

1. Guided reading instruction is a technique of determining what the students know and what they need to learn, and design instruction to bridge the gap between the two.
2. Guided reading instruction must be taught by a skilled teacher who understands the students' needs and can maximize the students' reading potential.
3. The purpose of guided reading is to provide students with strategies and experiences that help them to become independent readers.
4. The guided reading materials are selected from the students' independent or instructional reading level.
5. The goal of guided reading is for the students to construct meaning by using critical thinking skills and by making personal connections to the text.
6. Guided reading should help the students become more aware of their own reading behaviors.

7. Teachers are to not only teach children to read but to teach them to be readers.
8. The guided reading lesson is comprised of three components: before reading, during reading, and after reading (p. 310-11).

Small group instruction. In order to achieve this mission, the teacher provides students with small group instruction on a number of reading strategies, such as character analysis, word meaning, or inference. The small group guided reading structure is an effective practice because the instruction is precisely focused on the specific needs of the students to progress them to the next level (Iaquinta, 2006). Students are grouped based on their instructional reading level, interest, or needs in order to provide them with individualized or tailored instruction. With a number of grouping options, the method most often recommended is a dynamic or flexible grouping structure (Caldwell & Ford, 2002; Diller, 2007; Fountas & Pinnell, 1996). This temporary and adjustable structure is based on teacher observations, conferences with the students, and assessment data which are collected throughout the school year. Flexible groupings offer versatility to the teacher's instruction and allow students the prospect of working with different classmates who require the same instruction. "This approach provides teachers the opportunity to explicitly teach children the skills and comprehension strategies students need; thus facilitating the acquisition of reading proficiency" (Avalos, Plasencia, Chavez, & Rascon, 2007, p. 318).

After the flexible groups of children are established, the group is matched with texts, including novels, leveled readers, newspapers, magazines, reader's theaters, poems, books, or passages that provide a challenge for the students but allows for an appropriate level of teacher support (Calkins, 2001; Fountas & Pinnell, 1996; Rief &

Heimburge, 2007). The materials selected have purpose. The teacher's lesson objective is facilitated by the reading text selected. This instruction meets the state standards required at each grade level, scaffolds the students to reach or exceed their academic potential, and provides the students with instruction on reading strategies that will assist them in becoming more proficient independent readers. The teacher utilizes the text for each group as a tool to meet the students' needs. The leveled materials selected can be chosen from any realm as long as it meets the instructional focus strategy or skill required by the state standards.

Lesson construction. The guided reading lesson has essential elements but allows for the flexibility of the teacher's instruction and the students' needs. Once the instructional text has been selected and the groups have been formed, the structure of the lesson has three parts; before reading, during reading, and after reading (Calkins, 2001; Diller, 2007; Fountas & Pinnell, 1996). These elements are similar to the reading process of independent reading and should be encouraged as such. The guided reading group is gathered at a table, carpet, or at a centralized location where the teacher has materials necessary for their session, such as highlighters, a white board or chalk board, markers, pencils, post-it notes, and a personal copy of the text for each child. The teacher gives each student a book and provides a short introduction to the text. This introduction can include activating prior knowledge, previewing the text, doing a picture walk, and introducing "tricky" words (Diller, 2007; Fountas & Pinnell, 1996). The lesson might begin something like this:

Teacher: Today, we are going to be reading a book about an African American lady who was very brave. She was not allowed to do things that other people could because of the color of her skin. She wasn't allowed to drink from the same water fountains, eat at the same restaurants, or even sit in the front seat on a bus. She felt that it was unfair so she decided to take a stand. Let's look through the text to see what clues the author gives us about this lady. (This is the purpose of the lesson – to use text structure to aid in understanding).

Student: This title says "The Bus". This must be where she rides the bus but then the picture shows her being taken away by the police. She must have done something wrong on the bus. Did she sit in the wrong seat?

Teacher: We'll have to read to find out. Before we do, I want you to look at the word on page 6 where Johnny saw the picture of Rosa Parks being arrested by the police. Arrested is being taken away by the police because you have broken the law, can you find the word arrested on the page? (The students point to the word). Yes, this is the word arrested. Now that we have gotten an idea about the story, let's read about Rosa Parks and see what happens to her.

At this point the teacher has introduced the story and begins to activate the students' understanding of the text, much like the back cover of a novel would for an independent reader (Diller, 2007). This ends the before reading portion of the guided reading lesson. The introduction should be brief and focus on the skill or strategy being taught. The teacher's goal is to gain the students' interest in the text, relate it to their

previous experiences, and provide a frame of meaning that will support critical analysis of the text (Fountas & Pinnell, 1996).

As the students begin reading the text either silently or whisper reading depending on their stage of development, the teacher will listen in to each student making notes about their reading and providing support with the text (Avalos, Plasencia, Chevez, & Rascon, 2007; Fountas & Pinnell, 1996). The teacher will listen to each student read individually while the other students read at their own pace. During this time, the teacher may assist the student with decoding, understanding the text, or using strategies taught previously. Each observation of student reading should take a minute or so and will continue for all or most of the students in the group. The observations provide information about each child that will assist the teacher in preparing future guided reading instructional sessions and provide data for regrouping students. While the students are reading, they should be utilizing their problem solving skills to read the text for understanding. The children's focus should be on reading for meaning and not just decoding the words. They are focused on constructing meaning of the text, examining the details of the story with the aid of the pictures, making and revising their own predictions, and reflecting on the text (Fountas & Pinnell, 1996).

After reading has been completed by the group, the students focus back on the teacher. This time is used to discuss the text as a group to solidify the students' understanding and to share their thoughts about the text. The teacher may ask deep thinking questions, revisit portions of the text, and review the teaching point discussed

at the beginning of the lesson. Referring back to the previous example, the after reading may look something like this:

Teacher: So, what did you learn about Rosa Parks?

Student A: She was arrested because she wouldn't give up her seat on the bus.

Student B: I think it was unfair that she couldn't keep her seat. Why should she give her seat up or have to sit in the back of the bus?

Teacher: Well, this was part of history and many things like this happened to African American people. Tell me about what helped you to understand the story.

Student C: At the beginning, you mentioned the headings. I thought the headings helped because it gave me a little bit of information about what this part was about. I knew that page five and six was about the bus so I began thinking about a bus before I started reading that section.

Teacher: Exactly! Aspects of text structure, like the headings, will give you information about what you are about to read. Now when you are reading independently, I would like you to use the headings to help you start thinking about the section before you read and that will help you understand what you read better.

The teacher begins the after reading portion of the lesson by having a meaningful conversation with the students about the text. The conversation is an expedition into the students' understanding, a method to probe their minds to examine their thoughts. The conversation should end with the focus of the lesson (Diller, 2007). In the

example, the teacher ends with a discussion into the text structure and using the headings to aid understanding. It is important to provide the students with strategies that can be incorporated into the reading tools they use during independent reading.

Relevant studies. Research studies in the field of guided reading practices are limited and have a variety of focuses. Two studies (Bonfiglio, Daly, Persampieri, & Andersen, 2006; McCurdy, Daly, Gortmaker, Bonfiglio, & Persampieri, 2007) were conducted to investigate the conditions in which small group instruction improves fluency in students who are reading below average. Each of these studies had four participating students in each group. The conditions for the small group instruction included giving students a reward, prescribed instruction, and a control group. The prescribed instruction included listening to the passage, reading the passage, and word drills to correct reading errors. The researchers in both studies found that students' fluency rate increased with small group instruction that included the students listening to the passage, reading the passage themselves, and having the teacher provide error correction strategies.

An earlier guided reading study conducted by Wiggins (1994) investigated the use of flexible groupings with students who were slightly below grade level (2 ½ months) in reading. Twelve students participated in this study. The year prior to implementation students who were in this category ended the school year six months below grade level. After implementation of flexible guided reading groups, the participants were reading at two months beyond the grade level pacing guide. The teachers were able to meet the students' needs in the small group setting. The small

sample size limits the generalizability of the findings to other levels of students but did provide new understanding to the use of flexible groupings.

In 2007, two studies were published continuing the investigation into guided reading practices. The first was conducted by Avalos, Plasencia, Chavez, and Rascon (2007), which studied the use of a modified guided reading format for English Language Learners (ELLs). The modified format included the teacher reading the passage aloud to the students and included the use of vocabulary journaling. For students who speak another language, reading texts in English is difficult because of the barriers with vocabulary. Incorporating the read aloud and the vocabulary journaling would allow ELLs to gain more meaning from the text. Twenty-three middle school ELL students participated in this study. The students were assessed using an Informal Reading Inventory and research findings showed the students made an increase of 1.3 and 1.8 in reading level over the nine month course of the study. The second study conducted by Simpson, Spencer, Button, and Rendon (2007) found significant findings as well for students with Autism. Eleven students participated in this study including two girls and nine boys. The teacher in the self-contained classroom implemented guided reading instruction as well as work station activities for the students to complete while she was working with groups. The groups were flexible and changed on a daily or weekly basis according to the skills being taught. The study showed between six to twenty-four months of growth in the students' reading levels over the course of the school year.

Schirmer and Schaffer (2010) conducted a similar study using a two year single-subject experimental design with students at a school for the deaf. Nineteen deaf students from first to fifth grade participated in this guided reading study. Teachers provided the students with American Sign Language (ASL) instruction in small groups using the accepted guided reading protocol. The guided reading protocol included four steps; selecting the leveled books, introducing the book to the students using ASL, the students read the text silently as the teacher guided their reading, followed by a discussion with the students. The teachers did add a modification to the instruction by providing interactive guided reading where the teacher asked the students to read a smaller section of the text and asked them to look for specific details to answer a question. During the discussion portion of the lesson, the teacher encouraged the students to use higher order thinking skills and reflect on the strategies they used. The students made dramatic growth over the course of the school year but had declines during the summer months. The second year of implementation was not as successful because of personnel changes and the summer decline in performance. Many of the students took several months to recapture their previous year's performance level. The teachers did not employ all of the features of the approach except one and all but one teacher utilized reading materials on the students' independent level rather than using materials on the students' instructional level. The study also revealed that the after-reading discussion was often left out of the instructional practices. The school used the study findings to begin a summer reading program and to improve the implementation of the guided reading protocol.

Types of Text

As the state standards become more rigorous and adapted to include other types of text for reading comprehension, students are required to be able to process and comprehend both narrative and expository texts. Narrative and expository texts have their own structural characteristics which require students to utilize different reading strategies and skills. In the elementary school setting, students are exposed to both text structures but not in equal amounts. Research indicates that narrative texts are most often utilized for reading instruction (Duke, 2000; Ford & Opitz, 2008; Yopp & Yopp, 2000). In a study to investigate teachers' utilization of guided reading, Ford and Opitz (2008) used survey data to answer three research questions. The third question explored the types of text used during guided reading instruction. Based on the survey data, the teachers reported using narrative text two-thirds of time for guided reading. In a study conducted by Duke (2000) a sample of 20 first grade classrooms in 10 school districts in Massachusetts were investigated to identify the types of text used during reading instruction. Each classroom was visited for four full school days over the course of one school year. All types of print, classroom libraries, and writing activity comparisons were made. Duke found that very little informational text was displayed on the classroom walls. Classroom libraries represented a majority of narrative text only including 9.8% informational text. In 79 observational days, an average of 3.6 minutes per day was spent on informational text. Seven out of the 20 classrooms spent no time with informational text on the observation days. Seven classrooms spent less than five minutes and six classrooms spend an average of no more than 10 minutes

with informational text. The use of informational text in small group reading instruction only occurred five times where students were involved with reading or writing during the observations. "Thus, during times most clearly designed to teach children to read, children were typically not taught to read informational text" (p. 288). Expository text is utilized separately as textbook instruction for science or social studies. Understanding the structural features of narrative and expository text will increase awareness and necessity of both texts.

Narrative text. Narrative text includes structural elements, such as plot, characters, setting, point of view, and theme, which distinguish them from other literary forms (Tompkins, 2002). The characters are the individuals who are involved in the story which can include humans, animals, or objects. These individuals interact with each other, establishing the story. There is always at least one main character the story revolves around and often secondary characters that support the story and the main character. The setting includes the location, weather, historic time period, and time including both the time of day and the amount of time passage. The setting can be critical to understanding the story as it contributes greatly to the experience of the story or the setting can be insignificant to the story. The point of view is the direction from which the story is told. The story can be told by the main character (first-person), the author or narrator that knows all events and characters' thoughts (omniscient), a narrator who only expresses the thoughts and emotions of one character (limited omniscient or third person), and the last point of view is where the reader experiences only what is visible and audible (objective) (p. 385 & 387). Plot is the sequence of

events in which the characters are involved within the setting of the story. The plot is structured into an *introduction* where the characters and setting are established, *development or complication* where the conflict of the story is established, and finally the *resolution* where the conflict is solved and all the loose ends of the story are tied up (p. 375). The theme is the most difficult portion of the story to identify for elementary level students due to its abstract nature. Theme is the "underlying meaning of the story" that "embodies general truths about human nature" (p. 387). These components of narrative structure are considered as "narrative elements" by most basal readers and are a large component of reading instruction and state reading standards. Teachers are familiar with the narrative elements and are teaching these structures within the guided reading lessons and as part of a balanced literacy classroom.

Expository text. Expository or informational text is structured into five categories. The first is descriptive text where the author describes characteristics, examples, or features of a topic (Tompkins, 2002). This could include describing information about animals or people. The second type of expository text relates to a series of historically factual events that are described in a sequence. Comparisons, the third type, relates to text where the author provides evidence of how two or more things are alike and different. This is often taught as a "compare and contrast" task in writing. Relating writing and reading together would be a beneficial strategy for teaching this type of text. Another historically relevant expository text would include cause and effect, which includes text where the author describes the reasons or causes of specific events and the consequence of those events. Cause and effect texts relate

very well to science topics as well, such as plants' growth or animals for example. The last type of informational text is problem and solution, where the author presents a problem and offers one or more solutions to the problem. This type of text is often taught in writing as a persuasive essay format. Expository text includes factual information that is organized with headings and subheadings, will show diagrams or pictures of the material, and will have a designated structure (Duke, 2003; Tompkins, 2002). An informational text allows the reader to read to learn and gain new information that is often missing in the elementary school. "They [students] need to read widely and continue developing fluency and a flexibility as readers. They also need to continue developing their reading strategies, especially for reading informational texts" (Short, 1999, p. 133-4).

Integration of Science and Reading

With the lack of informational text being used in the elementary classroom and the need to provide students with materials that meet the standards and their individualized needs, what are teachers to do? The integration of reading and writing skills into other areas of the curriculum and vice versa could fill the need to increase the variety of text and to infuse expository text structures that are desperately lacking in today's elementary classroom. Research and scholarly suggestions recommend the increase of integrating the reading and writing standards into other content areas (McKee & Ogle, 2005).

Relevant studies. Carnine and Carnine (2004) address this relevant issue for middle school students who are unable to comprehend and read science textbooks.

Looking at trends in California schools, they found that 75-80% of middle school students were unable to read their textbooks. They site NAEP results that show both fourth grade and eighth students performing far below 35% proficiency in science. The article presents a suggested framework for integrating reading skill instruction into the structure of science lessons for middle school students. The lesson design implements explicit vocabulary instruction of affixes and root meanings and uses science passages for repeated readings to increase fluency. The authors suggest focusing on comprehension strategies using the science text beginning with having the students process the text. As far as the content knowledge is concerned, they suggest the use of mnemonics to recall details, graphic organizers for categorizing information, and connections between concepts.

Kroeger, Burton, and Preston (2009) also look at the issue of difficulty reading science texts for middle school students. This study examines the use of peer coaching techniques in two middle school science classrooms to improve comprehension of the content area text. The teachers implemented a peer-coaching format where students were partnered up with a classmate based on reading abilities. The students would read the science text to their partner while being provided with fix-up strategies by their partner and then the partners would switch. The teachers found that the students were more motivated to read the difficult text and were more engaged with reading the text than they were prior to implementation. Academically speaking, the assessments used showed some to little growth of comprehension of the text. Seventy percent of the students reported that they did not like the peer coaching technique but reported a

dislike for reading this type of text. The authors seemed to have a favorable view to using this technique and believed in the success of its implementation. The article provides suggestions for increasing the effectiveness of the technique to include flexibility, building independence, and a need to support the transfer of knowledge for the students.

Much of the research for implementing integration techniques into the science instruction relates to middle school instruction with its autonomous format. There is another study by Montelongo and Herter (2010) who investigated the implementation of reading and writing skills into the science classroom using technology to support comprehension. This article provides techniques for implementing technology-related tasks to facilitate science text comprehension including graphic organizers and sentence-completion tasks. The belief of the authors is that using technology to complete these activities will propel students into the 21st century of learning and that technology encourages student engagement (p. 95). The truth is that technology does have a fascination factor that encourages engagement but the authors do not present any scientific data to prove that these techniques improve academic performance.

Integration of reading skills in the science instructional practice is a common theory in the elementary school setting as well. Educators often suggest the inclusion of reading skills into the science instruction. In the elementary school setting, the two subjects are easily integrated and are more often incorporated into the lesson structures. Stephens (2010) conducted a quasi-experimental mixed-method design in the elementary setting investigating the effects of integrating science texts into the

format of balanced literacy. Stephens implemented a 12-week intervention protocol where teachers incorporated science-related informational text into the reading lesson. The teachers were required to provide a read-aloud and discussion using a science-based informational text. The students were then instructed to respond to the text in their reading response journals. Independent reading opportunities were given to students utilizing science-based periodicals and other science-related text. The researcher compared student performance to that of students at another comparable school where the intervention was not provided. The protocol was not required for the non-intervention group. The results showed that students involved in the intervention group performed at a higher level than that of the non-intervention group. The researcher contributes the increase in reading performance to the use of the instructional protocol and believes the high interest texts were also contributors to the increased performance. The only indicator of achievement related to reading comprehension and indicators of science performance were not included in this study. The instructional differences between the protocol and the non-intervention instruction could have contributed to the performance differences and not the text provided to the students. The researcher suggests further research studies in this area.

Another elementary school study in the area of integration, suggests utilizing science-related materials within the frame of balanced literacy, isolated in the guided reading structure. Fredericks (2003) describes his model for teaching guided reading using science-related literature through a five step process or model for teachers to use that fuses the guided reading framework of Fountas and Pinnell (1996) with the

addition of science extension. This model begins with "Setting the Stage", where the teacher selects a text with the appropriate reading level for the students in the groups and corresponds to the science concept and state standards being taught during science instruction (Fredericks, 2003). The before, during, and after reading activities are similar to those described by Fountas and Pinnell where the teacher introduces the story, has the students read, and follows up with strategy instruction. Fredericks completes his model with a science extension. This activity would provide the students with inquiry experiences that broaden the concepts read in the text and further strengthen their understanding of the state standards. Fredericks provides descriptions of actual examples from teaching lessons using this guided reading model showing the feasibility of integrating science into guided reading instruction.

Time. In the elementary classroom, time is a valuable commodity. With a limited amount of time in the school day and the pressure to meet Adequate Yearly Progress (AYP), teachers need to make critical decisions regarding their instructional time. The majority of the time allotted in the school day is devoted to reading and mathematics instruction which accounts for approximately 210 minutes a day or 3.5 hours (Harvey & Goudvis, 2007). Time for social studies and science instruction is often limited to the time remaining after lunch, recess, art, music, and physical education accounting for approximately 65 minutes a week, totaling 13 minutes a day of instruction. With short amounts of time being devoted to science and social studies, a teacher must find more creative means for providing the students with adequate exposure to the curriculum. As Calkins (2001) says, "We sometimes do guided-reading

work using short nonfiction texts from the social studies or science curriculum" (p. 187). Teaching a science concept such as food chains or water and land environments requires more time than 13 minutes of daily instruction for it to be processed by the brain and become retrievable.

Skill connections. Investigating the Virginia State Standards of Learning for both reading (Virginia Department of Education, 2003a) and science (Virginia Department of Education, 2003b), there are a number of commonalities in the skills required (see Figure 2). The shared content and skills reflected in the standards suggest the potential for integrating these topics to provide students with the pertinent reading instruction and critical thinking skills necessary for understanding scientific concepts. For example, the third grade standards in both English and science require students to make predictions, characterize and classify information, ask and answer questions, and to organize information logically (McKee & Ogle, 2005). Hapgood and Palincsar (2007) discuss the connective tissue between scientific inquiry and reading. They mention that "reading can be an important part of the inquiry process" (p.1). Informational text related to science also provides access to the world outside of the student's experiences which adds to the motivation and enrichment of learning.

With such strong connections in the curriculum, a teacher could easily teach reading skills while reading a content-related informational text during a science lesson or a guided reading lesson. This is the true definition of integration. Integration is defined as the link between language literacy and science literacy which easily enables teachers to better achieve their goals and to adhere to standards within the time frame

they have available by bringing both literacy and science together in one activity (McKee & Ogle, 2005). Royce and Wiley (2005) stated that integration of science and reading has found that "student achievement in science was at significantly higher levels than student achievement when the subjects were taught separately" and "reading scores improve as well" (p. 41). Therefore, if the achievement in these content areas increases through the integration of science and reading, it makes sense to implement integrated instruction.

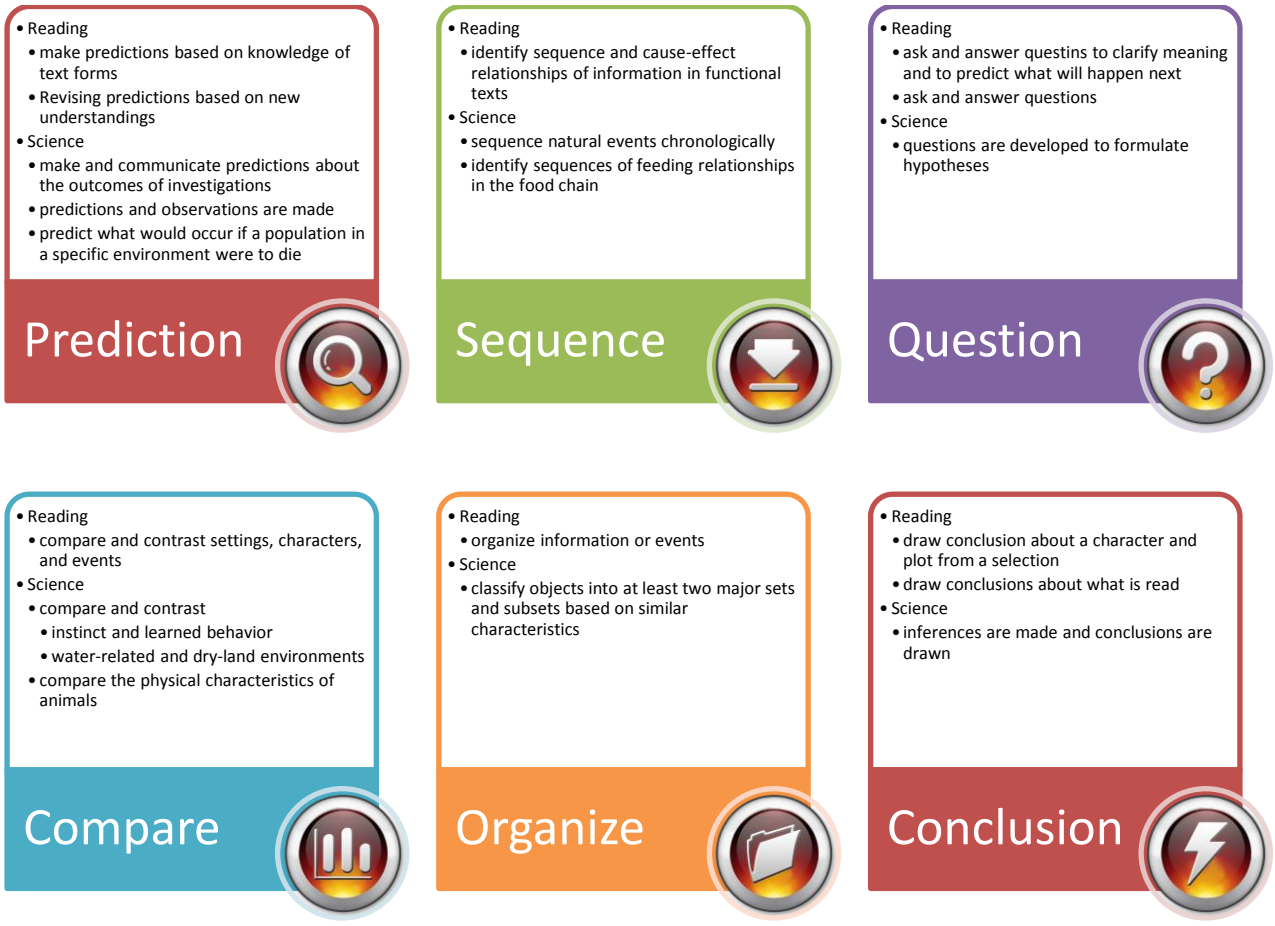


Figure 2: *Virginia Standards Comparison – Reading & Science*
(Virginia Department of Education, 2003)

Synthesis

With such a focus on reading instruction and research in the area of reading over the past two centuries, educators are looking to the research community for answers to improve student achievement. Balanced literacy has provided a framework for literacy instruction that incorporates the necessary components to improve reading achievement and increase student reading independence. The use of guided reading has several instructional benefits as well. Teachers can tailor their instruction to a small group of students in order to meet their individual needs. Also, guided reading can be used to scaffold students on a variety of levels to reach their highest reading potentials, from assisting low-achieving students to meet grade-level expectations to engaging high-achieving students to extend their knowledge with new information with previously read materials (Diller, 2007). The presentation of challenging texts can provide opportunities for the students to increase their reading level and progress them to new books they would not have been able to read. After the teacher provides the students with instruction on different strategies, these reading strategies can be assimilated into their independent reading repertoire. On the other hand, guided reading research has focused its attention to individual students or specific subgroups of students. This research is limited to a narrow field of study and has not investigated the impact of guided reading instruction holistically. Many experts have presented their work as "Best Practice" but research has not been conducted to identify the academic impact of this practice.

With research identifying a lack of expository text being used in classroom instruction, the lack of time being allotted to the content areas of the curriculum, and the tremendous link between the standards of reading and science, integration seems to be the only means to make it all possible. Authors, scholars, and researchers in these areas have provided a plethora of strategies for integrating informational text, content area curriculum, and the language arts together. Due to this time limitation, "many teachers have begun to double-dip, using their literacy block to integrate content into their literacy time" (Rief & Heimburge, 2007, p.4). There is a lack of scientific research in the area of integration and the effects on student achievement in the elementary school setting. Many scholars present their suggestions to the educational community with regards to methods or protocols for integration but little has been done to investigate the academic impact on student achievement. Utilization of content-based reading materials during guided reading instruction could enhance the content being learned in science as well as develop an understanding of reading informational text; thus, adding to the literature and providing teachers with research-based practices that may ultimately improve student achievement.

Chapter 3

Methodology

Design of the Study

In an effort to add to the literature and investigate educational practices, the researcher focused the study on the materials used during guided reading instruction in third grade. This quantitative, quasi-experimental study compared the effects of different reading materials used during guided reading instruction on student academic performance in reading and science.

The research questions for this study were as follows:

1. To what extent does guided reading instruction using content-based reading materials influence the students' knowledge retention in science in comparison to the use of literature-based guided reading materials?
    1.1. How do the materials used affect science performance for students of different academic levels?
    1.2. Is there an effect on science performance based on gender?
2. To what extent does the use of content-based reading materials affect the students' reading performance in comparison to the use of literature-based guided reading materials?
    2.1. How do the materials used affect reading performance for students of different academic levels?
    2.2. Is there an effect on student reading performance based on gender?

3. To what extent does a teacher's guided reading instruction change based on whether they use content-based reading materials as opposed to the use of literature-based guided reading materials?

The researcher used a pre-test, post-test design (Figure 3) as a means of determining if significant differences in the post-test measures existed between the two groups (L vs. C) for overall performance in reading and science. Secondary analysis was examined for reading level performance and gender differences for the two groups as well. Five instruments were used in this study, the Phonological Awareness Literacy Screening (PALS), the Reading for Application and Instruction assessment (RAI), the Living Systems and Life Processes assessment (LSA), the Guided Reading Survey (Appendix C), and the Guided Reading Observation form (Appendix E). All student participants took both the RAI pretest and the LSA pretest prior to beginning the study. The teachers utilized the designated materials for all guided reading sessions and provided science instruction for the Living Systems and Life Processes unit based on the essential knowledge for the Virginia SOLs. At the end of the science unit, all student participants took both the RAI posttest and the LSA posttest.

$$L \rightarrow S_1\ R_1 \rightarrow X_L \rightarrow S_2\ R_2$$

$$C \rightarrow S_1\ R_1 \rightarrow X_C \rightarrow S_2\ R_2$$

L = Literature-based
C = Content-based
S_1 = Science pretest (LSA)
R_1 = Reading pretest (RAI)
X = Guided reading materials used
S_2 = Science posttest (LSA)
R_2 = Reading posttest (RAI)

Figure 3: *Design Diagram*

Participants and Setting

To answer these questions a quasi-experimental design was employed to investigate the academic impact. Five third grade teachers at an elementary school located in a suburban county in northern Virginia participated in this study. The school supports a variety of student services, including Autism, learning disabilities, English Language Learners, as well as economically disadvantaged students. The school has an ethnically diverse population with the majority of the population of students representing Caucasian and African American ethnicities. This elementary school is located in a largely transient area due to close proximity to a large military base.

As part of a county initiative, guided reading is a required daily component for all elementary English instruction. A number of professional development seminars have been offered in the county and the literacy coach at the school provides implementation support to the teachers. During the designated science unit of Living Systems and Life Processes, the teacher participants either provided their students with science-based or literature-based materials during their guided reading instruction within their language arts block. The science instruction remained unaffected by the implementation of these materials. The grade level team collaborated during their planning sessions in order to provide similar instruction for the science unit. All students received science instruction that corresponds to the state content standards and essential understandings.

The participating school was selected due to convenience and based on guidelines of the county's research stipulations. The researcher meet with the third grade teachers at the county approved school site prior to beginning the study at which

time the researcher provided the participants with a full description of the parameters, protocol, and purpose of the study. Five of the six teachers on the grade level agreed to participate in the study and signed the teacher consent form (Appendix A). The one teacher who chose not to participate felt her class and her instructional methods would not adhere to the standard implementation of guided reading practices. The participating teachers self-selected into one of two groups: literature or content. The distribution of teachers by years' experiences is shown below (Table 1). Three teachers chose to use literature-based materials and two teachers decided to use content-based materials for guided reading instruction for the six to eight week duration of the science unit. Having the choice to utilize the materials which best suited each teacher's instruction and methods while adhering to the parameters of the study increased the fidelity of implementation and reduced the subject effects.

Table 1
Teacher by Material Group

Teacher	Years' Experience	Years on Grade Level
	Literature	
B	4 years	4 years
C	10 years	2 years
E	1 year	1 year
	Content	
A	10 years	8 years
D	3 years	3 years

The teachers were categorized as either Group L (literature) or Group C (content), which was used for all data analyses. The researcher provided support to the teachers who self-selected to incorporate science-related materials by providing a list of suggested titles that corresponded to the essential knowledge for the science unit and made copies for small group instruction as needed for the teachers.

There were 112 students enrolled in the five classes at the start of the study. During the study 4 students moved out of the school's jurisdiction, leaving 108 students in the five third grade classes. As per the county requirements, a parent consent form (Appendix D) requesting parent permission to have the students' data released to the researcher was sent home to each of the 108 students. An additional copy of the consent form was sent home to those who had not returned the form by the due date. A number of consent forms were acquired from the additional request. 82.4% of the students returned the consent form, leaving 17.6% of the students who did not return the form. Four parents requested not to have their child's data released, resulting in a total sample size of 85 students for the data analysis. The overall and participating sample is listed in table 2.

Table 2
Student Characteristics for the Five Classes

	Total	Consenting Sample	Consented %
Total Students	108	85	78.7%
Male	55	41	74.5%
Female	53	44	83.0%
	Reading Level		
Below Level	21	15	71.4%
On Level	36	28	77.8%
Above Level	51	42	82.4%
Literature Group	66	50	75.8%
Content Group	42	35	83.3%

Guided Reading Intervention

Teachers who utilized the more traditional materials for guided reading instruction were identified as using literature-based materials (Group L). The literature-based materials included level readers from the basal series, novels, Reading A to Z books, and SOL released passages. Teachers who self-selected to utilize science-based reading materials for guided reading instruction were classified as using content-based materials (Group C). Content-based reading materials included science readers and Reading A to Z books that related to animals, habitats, adaptations, environments, and food chains and webs. These materials focused on the Living Systems and Life

Processes portion of the science curriculum as part of the reading experience. Narrative and expository text were included in both types of materials.

The teacher participants provided the students enrolled in their classrooms typical small group instruction for the guided reading sessions. The duration of the implementation of the use of the guided reading materials lasted between six to eight weeks. In Groups L and C, the teachers worked with the students on word-recognition and decoding strategies, reading comprehension and vocabulary instruction, as well as fluency and reading tactics. These included activities such as breaking words apart and looking at word patterns, understanding vocabulary in the text, narrative and expository elements, and reading with inflection and expression. The students were given reading materials that corresponded to their reading ability and instructional needs. Collaborative planning and peer interactions assisted the teachers in implementing the appropriate materials into their classroom guided reading instruction.

Based on the established reading levels and the needs of the students, the teachers grouped their students into flexible reading groups. Each group contained four to six students who were reading on or around the same reading level. Once the groups were established, the classroom teacher located, copied, and utilized the instructional materials on this level as part of the teacher-directed guided reading instruction. All of the instruction was tailored to the students' needs and ability levels. Guided reading instruction was provided for each group focusing on that particular group's needs in order to improve comprehension, fluency, and word recognition.

The research for this study extended for the duration of the Living Systems and Life Processes unit of instruction, which lasted for approximately six to eight weeks. The teacher participants provided self-reported data regarding their implementation of guided reading practices through a pre- and post-test survey. In addition, the researcher conducted one observation of each teacher during their guided reading instruction using an adapted version of the county's observation criteria for guided reading instruction, which is discussed in further detail below.

Instrumentation

PALS. The PALS (Invernizzi, Meier, & Juel, 2011) assessment was administered at the beginning of the school year by each classroom teacher as part of the initial battery of assessments and is a state required assessment for all kindergarten through third grade classes. Pilot tests and evaluations of all components of the PALS have been conducted from 1998 through 2005. These data indicate that the PALS is stable and reliable with a mean Cronbach's Alpha of .80 and a median coefficient of .81 (p. 31). Due to the fact that teachers are administering this assessment individually, tests of inter-rater reliability revealed a great deal of reliability with alpha levels of .98 and .99 (p. 33). Validity evidence included content, construct, criterion-related, and concurrent validity. The PALS was tested against many other reading assessments including the Virginia SOL as well as the Qualitative Reading Inventory (QRI), the Developmental Reading Assessment (DRA), Stanford-9, and the California Achievement

Test (CAT/5). All tests show a significant level ($p<.01$) of validity evidence for the PALS (p. 35-46).

During the fall of 2011, the teachers administered the PALS to all third grade students utilizing the procedures and guidelines established by the Virginia Department of Education. The teacher had each student read a list of words on each grade level from second to sixth. Out of 20 words, the student must be able to read 15 or more words quickly without error in order to show mastery on that level. The highest mastery level was selected for the reading passage. The student read the passage aloud to the teacher while being timed as the teacher recorded all reading errors and noted all corrections the student made while reading. The time taken to read the passage (which was converted to words per minute), the number of errors, and the fluency rating was recorded by the teacher. The fluency rating is based on a 3, 2, 1 rubric of descriptors the teacher used to identify the student's inflection and expression. The student was then asked to complete six multiple-choice comprehension questions. This process continued until the instructional reading level was found for each student. The data from each component of the assessment was entered into the PALS website database and the website determined the student's reading level from pre-primer to sixth grade. These reading levels were provided to the researcher by the reading specialist and used to categorize the students as "on", "below", and "above" level for comparison in the data analysis (Figure 4). Each teacher was provided a list of the reading categories for their students. The teachers were asked to make adjustments to

the reading categories based on their knowledge of the students' abilities. The adjusted categories of below, on, and above were used for analysis of these data.

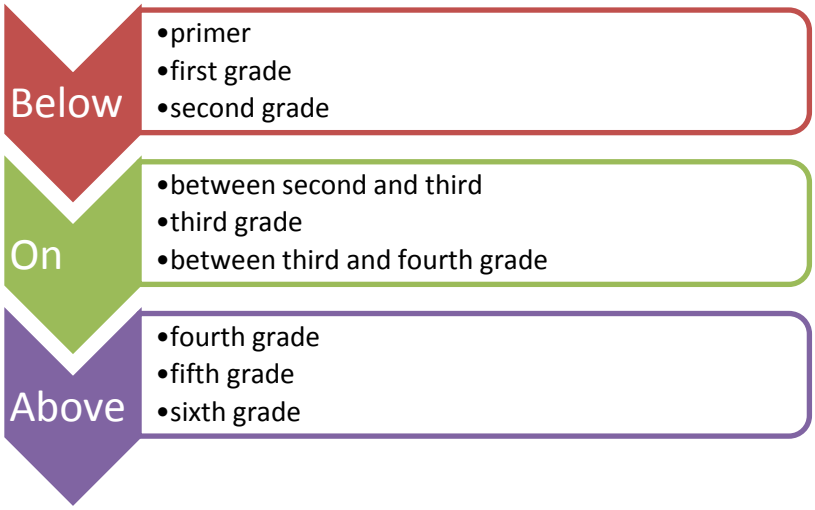


Figure 4: *Reading Level Categorization*

RAI. The Reading for Application and Instruction (RAI) is a Continental Press (2002) produced assessment required by the county to be administered two to three times per year. It was administered at the beginning of the school year to establish a baseline score, again mid-year to determine intervention needs, and finally at the end of the school year to see growth. This assessment evaluates a number of reading comprehension skills required for the grade level, which include analyzing character, cause and effect relationships, inference making, point of view, and analyzing language to name a few. The students were required to read a passage and then answer comprehension questions about the passage. This process continued for a number of

passages and includes 40 questions. The RAI was proctored by the classroom teacher where each student had a test booklet and recorded their answers on a bubble sheet. Later the school's Technology Resource Teacher (TRT) scanned all the student documents into the Exam View software program (2008) and student scores were printed and provided to the teachers. The TRT provided a copy of the percent correct scores for each student to the researcher for both the pretest and posttest. The RAI pretest was administered according to the county's mid-year testing window (in February) and prior to beginning the Living Systems and Life Processes unit in science. All participating teachers administered the RAI at the end of science unit, approximately 12 weeks later.

Living systems and life processes assessment. The Living Systems and Life Processes assessment (LSA) was administered on Exam View in a pretest/posttest format as well. Students took the LSA (Appendix B) pretest prior to beginning any instruction for the science unit. As an end of unit assessment, teachers administered the LSA, representing the posttest data point. The LSA was constructed by three doctoral students and a county third grade teacher (who was also a doctoral student) in 2009 for the following Science SOLs:

- Standard 3.4: The student will investigate and understand that behavioral and physical adaptations allow animals to respond to life needs.
- Standard 3.5: The student will investigate and understand relationships among organisms in aquatic and terrestrial food chains.

- Standard 3.6: The student will investigate and understand that environments support a diversity of plants and animals that share limited resources (Virginia Department of Education, 2003b).

The team began assembling the test items by reviewing released SOL multiple-choice test questions from years 2000-2008 and from a test bank used for reviewing the standard by teachers in a southern Virginia county. The test bank was provided by one of the doctoral students who had been working in this county and had been used to create benchmark assessments. Redundant items were eliminated and the remaining items were placed into a pool of test questions. Each question was matched to the appropriate information for the essential knowledge from all three standards. This process ensured that all information stated in the essential knowledge was represented on the constructed assessment. New items were constructed for any component of the essential knowledge that was not represented. The assessment was reviewed by expert third grade teachers and was pilot tested by fourth grade students who had learned the information the year prior. The pilot results showed a great deal of variability by question and standard. The Kuder-Richardson Formula 20 (K-R 20) alpha level was .852 which indicates a high level of reliability for the 39 item test. Items were reviewed for face validity and construct validity. Based on the expert teachers who reviewed the final assessment, the test was considered to be a valid instrument and was used by the teachers to assess their students on these three content strands in the years that followed.

Guided reading survey. Prior to beginning the study and again at the end of the study, each participating teacher completed a short Guided Reading survey (Appendix C). This eleven question survey was adapted from a survey used by Ford & Optiz (2008). The survey used in their research contained twenty-eight questions addressing a number of elements of literacy instruction. For the purposes of this study, the questions related to instructional time and guided reading practices were selected for inclusion and all others were eliminated, creating an eleven question survey. Additional responses were added to question eleven in order to provide additional information related to materials being used for guided reading practice and corresponding to the types of materials available to the teacher participants. The researcher met with the teachers at the beginning and conclusion of the study to administer the survey in an effort to get full participation in the survey and obtain pertinent data regarding the guided reading practices employed before and throughout the duration of the research study period. The survey data were entered into SPSS 19 (2011), a computer-based data and statistical analysis system. The descriptive statistics were provided in the data analysis.

Observation. The observation form (Appendix E) was created by the researcher to record information about the teachers' practice. The observation form was created from two sources, the work of Fountas and Pinnell (1996) and the county provided observation form. The information found during the literature review for this study about guided reading practices was incorporated into the observation form as well. The county approved checklist of literacy practices was adapted into the

observation form. During the county approval process for this study, the finalized observation form was approved for use by the county research evaluation team. The finalized form was used for all observations of the participating teachers' guided reading instruction.

Data Collection Procedures

The school personnel provided the researcher with a printed copy of the following assessment data:

- Fall 2011-2012 PALS summary report – which reported the reading level of each student
- Mid-year (pretest) and the Posttest RAI Exam View student summary report – which reported each student's percent correct score
- LSA pretest and posttest Exam View student summary report – also reported as a percent correct score

For data analysis, the researcher entered all the assessment data into SPSS 19. Student data were saved in a secure location and all identifiers were removed from the final data set prior to analysis and publication.

Guided reading observations were conducted in the classroom's natural setting during the reading/language arts block. The observations were scheduled during a two week time frame in the middle of the Living Systems and Life Processes unit. The researcher met with each teacher individually to determine the appropriate time for the observation and times were established for each observation session. The observation

form was provided to the teachers prior to conducting the observations. The researcher entered the classroom during the time frame given by the teacher and sat in close proximity to the guided reading instructional session. The observer did not interact with the students or the teacher during the guided reading lesson. The number of students was counted, the level of students was inductively determined, and the materials were noted. The researcher observed and noted important details of the guided reading lesson. The "before reading" components included the teacher modeled strategy, previewing the text, vocabulary review, and the teacher established purpose for reading. The "during reading" components included the students reading independently while the teacher listened to each student read. The number of students the teacher checked in with was recorded on the observation form. The "after reading" components of the teacher's wrap up of the guided reading session included maintenance of the lesson topic or focus as well as the level of the teacher's encouragement of discussion and higher level thinking skills. The researcher also made note of other important details of the guided reading lesson including connections and integration of other content areas. One guided reading session was observed for each teacher.

Variables

The reading materials selected for guided reading instruction represented the independent variable, providing for the comparison of the two groups, and were used to categorize and analyze these data. The dependent variables in this study included

two continuous variables reported as percentage scores which included: (1) student achievement indicators for reading; and (2) student achievement indicators for science. The reading and science indicator variables were provided by the RAI posttest and LSA posttest. The independent variable included the instructional materials provided to the students during guided reading instruction which was reported on two levels, Group L (literature) and Group C (content). Secondary analysis utilized the categorical variables for gender and reading level. Gender was provided by parent consent forms and was reported on two levels, male and female. Reading level categories was based on the interval variable from the PALS assessment in conjunction with the teachers' feedback and was reported on three levels, as below, on, and above level.

Analysis

The first and second research questions of this study were analyzed using the RAI and LSA scores, administered at the beginning of the Living Systems and Life Processes unit as the pre-test and at the end of the unit as the posttest. The RAI and LSA pretest variables were used as covariates for data analysis. The secondary analysis compared students in each reading level category (on, below, and above) and gender (male and female) as an interaction with material type. The statistical procedures conducted to explore the performance data included an analysis of covariance (ANCOVA) for the student achievement variables. These data were compared by material type. Two models were created in the ANCOVA for each of the dependent variables, LSA and RAI. Fixed factors included the categorical variables of

material type, gender, and reading level. Random factors were not included in the model. For each model the pretest assessment was entered as a covariate for the analysis. Significance levels and mean scores for each categorical variable in relation to material type were also analyzed in order to answer the research questions. Means were also displayed for material type and all interactions with material type.

The third research question for this study was analyzed using the observations of the teachers' guided reading instruction and the teacher survey pre-test and post-test data. The results from the observations and the survey data were used to identify differences in guided reading instructional practices of the teachers which contribute to the research findings.

IRB Statement

IRB review was processed through an expedited review (VCU IRB # HM14237) and was submitted after the prospectus approval and county approval. IRB approval (Appendix F) and county approval to conduct the study was received prior to beginning data collection.

Chapter 4

Results

Introduction

This chapter is organized into four sections. The first section offers an overview of the data collection and analysis process. Descriptions of the variables and data related to these variables are given. The second section provides extensive results of the data in correspondence with the first research question and the sub-questions related to the science component of the data. The third section provides results much like that in section two but will answer the second research question and its sub-questions in relation to the reading component of the data. The fourth section explores the findings for the third research question which includes the teacher survey data and the guided reading observations. These data identified differences reported by teachers and observed by the researcher for the teachers' guided reading instruction. The discussion of these findings is found in chapter 5.

Data Collection

The data collected in this study came from three sources. The first component for this study came from student level data. For each of the five teachers, data were collected for eight variables and was entered into SPSS 19 by the researcher. The teachers were coded by letter from A to E in a random order and were labeled by the type of material they chose to use during the research study, either literature or content. Each student was originally listed by first name and last initial for ease of data

entry but once data entry was complete all student names were deleted from the file in order to preserve student anonymity.

Student level variables were also entered into the data file included gender, special education status, PALS level, reading level category, RAI pretest, RAI post-test, LSA pretest, and LSA post-test. The gender variable was coded 1 for female and 2 for male and was used as a categorical variable for the secondary components of the research questions. There were 44 female and 41 male students included in the data set. Special education status indicated a 1 for yes and all others were coded with a zero. Special education students received accommodations for the science assessments which included having the test read aloud to them based on the requirements of his or her Individual Education Plans (IEP). Student data for all students were included for the science component of the analysis since the special education students received the appropriate accommodations for their disability. As part of the county's administration protocol for the RAI, students could not have the test read aloud and therefore, were not given accommodations. Not having accommodations for the RAI assessment put these students at a disadvantage and thus made the test for these students invalid. These students were excluded from the data analysis for the reading component of the analysis.

PALS level was reported from 1 to 6 as an interval variable and was collected from the reading specialist who printed a report from the PALS website. These data were used to categorize the students as below, on, and above level which was used for the sub-question data analysis. Teachers were provided a list of the levels based on

the PALS reported level and were able to make changes based on their knowledge of the students. The adjusted levels were used in all data analysis (Table 3). The RAI and LSA were reported as percentage scores. The RAI pre-test data were used as a covariate for the analysis of the reading dependent variable (RAI post-test). It was deemed most appropriate to utilize the pretest scores as the covariate since the teachers made some adjustments to the reading level categories based on the PALS reading level data. Using the pretest as a covariate, took into account the students' performance level in reading based on the pretest scores. In the same fashion, the LSA pre-test data were used as a covariate for the analysis of the science dependent variable (LSA post-test). The science assessment was written on a third grade reading level and incorporated pictorial representations for the questions in an effort to create a test that was appropriate for third grade level students. Students who received accommodations had the test read aloud in order to eliminate the negative effect of reading ability. Based on these accommodations and the appropriateness of the assessment, the pretest was utilized as a covariate for the LSA posttest variable.

Table 3
Reading Level Frequencies

	Literature	Content	Total
Below Level	7	8	15
On Level	15	13	28
Above Level	28	14	42

The second data collection component represented teacher self-reported data from the teacher survey of guided reading practices (Appendix C). The teachers reported the time spent on reading and small group instruction, the purpose of guided reading instruction, and the materials used during guided reading. The teachers provided survey data prior to beginning the study and after the study was completed, representing pre- and posttest data results. These data were compared to identify differences in the guided reading practices over the course of the study in response to the third research question.

The third data collection component was obtained from the guided reading observations. The researcher conducted observations of the teachers' guided reading instruction on one given day mid-way through the research study. These data were used to make decisions regarding the implementation of guided reading practices in response to the third research question. Discussions of these results are presented in this chapter and later in chapter five.

Impact on Science Achievement

The researcher began the analysis for this quasi-experimental study by comparing the performance of the students in relation to the first research question and its corresponding sub-questions.

1. To what extent does guided reading instruction using content-based reading materials influence the students' knowledge retention in science in comparison to the use of literature-based guided reading materials?

1.1. How do the materials used affect science performance for students of different academic levels

1.2. Is there an effect on science performance based on gender?

The analyses for this question focused on the students' performance on the LSA. The secondary analysis answered the sub-questions listed above. In order to answer the research question, the researcher investigated the following null and alternative hypotheses:

H_0: $\mu_C = \mu_L$ versus H_1: $\mu_C > \mu_L$

Where μ_C = mean science score for Content-based reading instruction

μ_L = mean science score for Literature-based reading instruction

The ANCOVA was conducted to investigate the students' performance on the LSA. The model included material type, reading level, and gender as fixed factors along with the pretest score representing the covariate. The comparisons of the fixed factors were analyzed by material type in order to determine the effects of the use of the two instructional materials on student science performance. The findings showed no significant difference (p=0.714, df=1, F=0.136) in student performance for the two groups, literature or content (Table 4). On average, the literature group had a mean of 80.4% while the content group had a mean of 81.6% (based on the covariate LSA pretest=60.471). Although the content group had a higher mean than that of the literature group, it was not statistically significant. Based on this analysis, the evidence was not adequate to reject the null hypothesis.

Table 4
Science Univariate Analysis of Covariance

	Sum of Sq.	df	Mean Square	F	Sig.
Corrected Model	16328.374[a]	12	1360.698	11.257	.000
Intercept	9767.728	1	9767.728	80.810	.000
LS Pretest	3296.275	1	3296.275	27.271	.000
Material (M)	16.380	1	16.380	.136	.714
Reading Level (RL)	373.670	2	186.835	1.546	.220
Gender (G)	676.677	1	676.677	5.598	.021
M * RL	160.014	2	80.007	.662	.519
M * G	10.063	1	10.063	.083	.774
RL * G	531.377	2	265.688	2.198	.118
M *RL*G	19.258	2	9.629	.080	.924
Error	8702.803	72	120.872		
Total	596981.250	85			
Corrected Total	25031.176	84			

a. R Squared = .652 (Adjusted R Squared = .594)

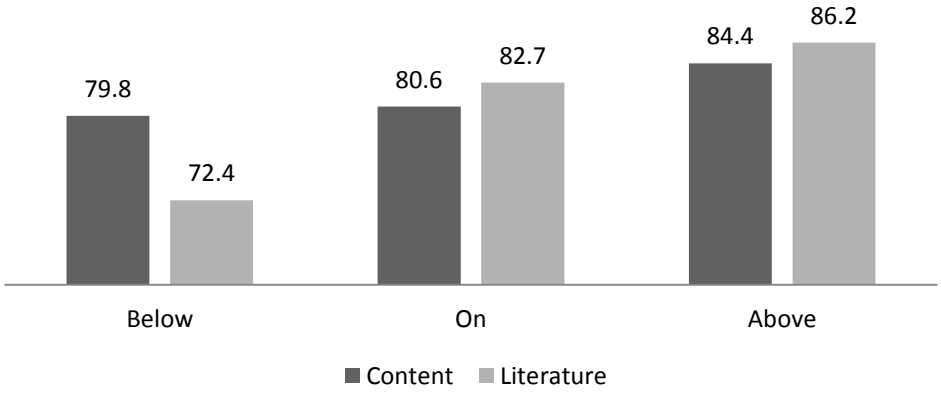
Analysis of the sub-research question 1.1 was conducted in order to identify if a difference existed between students on different reading levels for the LSA based on the instructional materials provided to the students. The null and alternative hypotheses for this question are stated as follows:

H_0: No interaction effect exists between reading level and material group

H_1: An interaction effect exists between reading level and material group

This analysis indicated no significant interaction (p=0.519, df=2, F=0.662) between the different reading levels for either the literature or content group on the science

posttest; therefore, the evidence was not adequate to reject the null hypothesis (Table 4). Further investigation into these results showed findings that could be of practical interest to teachers. Overall for both the literature and content groups, students who were categorized as on level and above level had comparable results. These results were within two percentage points of each other. On the other hand, students who were categorized as below level had a higher performance mean score by over seven percent for the content group (Figure 5).



Covariates appearing in the model are evaluated at the following values: LS Pretest = 60.471

Figure 5: *Science Comparison by Reading Level*

Further analysis was conducted to investigate the gender differences for the two material groups. This analysis responded to research sub-question 1.2 using the following null hypothesis:

H_0: No interaction effect exists between gender and material group

H_1: An interaction effect exists between gender and material group

This analysis showed no significant interaction (p=0.774, df=1, F=0.083) between male or female students for either the literature or content group (Table 4); therefore, the evidence was not adequate to reject the null hypothesis. For the literature and content groups, the female students averaged 84.7% and 84.9% respectively. These data show a marginal mean difference for male students with 76.2% for the literature group and 78.3% for the content group (based on the covariate LSA pretest=60.471).

Upon further investigation into the interactions of all three fixed factors, one must consider the following hypotheses:

H_0: No interaction effect exists between gender, reading level, and material group

H_1: An interaction effect exists between gender, reading level, and material group

There was no significant three way interaction (p=0.924, df=2, F=0.080) between the three variables. It was apparent that below level students, both males and females had higher mean scores on the LSA for the content group over that of the literature group (Table 5). Male, below level students averaged almost eight percentage points higher for the content group and female, below level students averaged almost seven

percentage points higher. The female below level student outperformed her on-level and above level peers for this assessment and had the highest performance level for the LSA. These results have practical interest for teachers.

Table 5
Science Comparison by Gender and Reading Level

Level	Content		Literature	
	N	Mean	N	Mean
		Male Students		
Below	7	71.5%	5	63.6%
On	3	77.8%	8	80.0%
Above	6	85.5%	12	85.1%
		Female Students		
Below	1	88.0%	2	81.2%
On	10	83.4%	7	85.4%
Above	8	83.3%	16	87.3%

Covariates appearing in the model are evaluated at the following values: LS Pretest = 60.471

Impact on Reading Achievement

The researcher began this portion of the analysis by comparing the performance of the students in relation to the second research question and its corresponding sub-questions.

2. To what extent does the use of content-based reading materials affect the students' reading performance in comparison to the use of literature-based guided reading materials?
    2.1. How do the materials used affect reading performance for students of different academic levels?
    2.2. Is there an effect on student reading performance based on gender?

The analyses for this question focused on the students' performance on the RAI post-test assessment while taking the students' performance on the pre-test into account. The six students who received special education accommodations for reading were not given accommodations for this assessment based on the county's testing protocol and were at a disadvantage relative to their peers. The data for these students were eliminated for this portion of the analysis. Three students (one regular education and two special education students) had missing data for either the RAI pre-test or the post-test. The generation of scores for the missing data was not deemed appropriate for the sample size and could inaccurately influence the results; therefore, missing cases were not included for this analysis. The researcher wanted to preserve the accuracy of the results for each individual student.

The analysis for the reading assessment included 78 student participants. The secondary analysis answered the sub-questions listed above. In order to answer the research question, the researcher examined the following null hypotheses:

H_0: $\mu_C = \mu_L$ verses H_1: $\mu_C \neq \mu_L$

Where μ_C = mean reading score for Content-based reading instruction

μ_L = mean reading score for Literature-based reading instruction

An ANCOVA was conducted to investigate the students' performance on the RAI. The model included material type, reading level, and gender as a fixed factor along with the pretest score as the covariate. The comparisons of the fixed factors were analyzed by material type in order to determine the effects of the use of the two instructional materials on student reading performance. For the two groups, the findings showed no significant difference ($p=0.415$, $df=1$, $F=0.674$) in student reading performance (Table 6). On average, the literature group had a mean of 81.8% while the content group had a mean of 80.4% (covariate of RAI pretest=74.904). Based on this analysis, the evidence was not adequate to reject the null hypothesis. The use of different guided reading materials did not appear to affect the students' performance on the reading assessment.

Table 6
Reading Univariate Analysis of Covariance

	Sum of Sq.	df	Mean Square	F	Sig.
Corrected Model	10650.245[a]	12	887.520	24.537	.000
Intercept	870.830	1	870.830	24.075	.000
LS Pretest	4773.570	1	4773.570	131.972	.000
Material (M)	24.370	1	24.370	.674	.415
Reading Level (RL)	38.272	2	19.136	.529	.592
Gender (G)	16.758	1	16.758	.463	.498
M * RL	84.561	2	42.280	1.169	.317
M * G	18.230	1	18.230	.504	.480
RL * G	18.140	2	9.070	.251	.779
M *RL*G	30.349	2	15.175	.420	.659
Error	2351.118	65	36.171		
Total	523868.750	78			
Corrected Total	13001.362	77			

a. R Squared = .819 (Adjusted R Squared = .786)

Analysis of the sub-research question 2.1 was conducted in order to identify if any differences existed between students on different reading levels for the RAI based on the instructional materials provided to these students. The null hypothesis for this question is stated as follows:

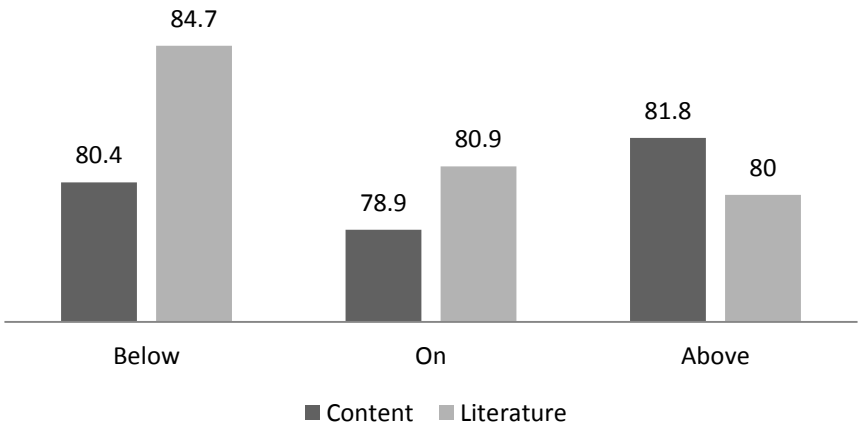
H_0: No interaction effect exists between reading level and material group

H_1: An interaction effect exists between reading level and material group

This analysis indicated that no significant interaction (p=0.317, df=2, F=1.169) exists between the different reading levels for either the literature or content group;

therefore, the evidence was not adequate to reject the null hypothesis (Table 6). In this case, the reading materials chosen for guided reading instruction did not affect the students' performance on the RAI based on different reading levels either.

Overall, the difference between the two groups was minimal and varied slightly by reading level. For both the literature and content groups, students who were categorized as below level, did have the highest average score on the RAI but was a marginal difference with only four percentage point higher than their content counter-parts (Figure 6). For the on level students, there was a difference of two percentage points in favor of the literature group. When examining the above level students' means, there was approximately a two percentage point difference in favor of the content group. The marginal differences were not statistically significant and showed inconsistent findings for the two groups.



Covariates appearing in the model are evaluated at the following values: RAI Pretest = 74.904

Figure 6: *Reading Comparison by Reading Level*

Analysis for gender was investigated for research sub-question 2.2 using the following null hypotheses:

H_0: No interaction effect exists between gender and material group

H_1: An interaction effect exists between gender and material group

This analysis showed that no significant interaction (p=0.480, df=1, F=0.504) exists between the literature or content group for either males or females (Table 6); therefore, the evidence was not adequate to reject the null hypothesis. For the literature and content groups, the female students averaged 81.8% and 81.6% respectively (covariate of RAI pretest=74.904). These data show a marginal mean difference for male students with 81.9% for the literature group and 79.1% for the content group (covariate of RAI pretest=74.904). The difference between the two groups for male students only showed a two percentage point difference.

Upon further investigation into the interactions of all three fixed factors, one must consider the following hypotheses:

H_0: No interaction effect exists between gender, reading level, and material group

H_1: An interaction effect exists between gender, reading level, and material group

There was no significant three way interaction (p=0.924, df=2, F=0.080) between the three variables. It was apparent that below level and on level male students had marginal differences of approximately four percentage points in favor of the literature group (table 7). The male, above level students were very close to the same score for the two material groups. For female students, the below level girls scored around five percentage points higher for the literature group. On level female students were very similar in mean score for the two groups. Above level female students had a three percentage point difference in favor of the content group.

Table 7
Reading Comparison by Gender and Reading Level

Level	**Content**		**Literature**	
	N	Mean	N	Mean
		Male Students		
Below	4	80.6%	3	84.0%
On	3	76.9%	8	82.4%
Above	6	79.8%	12	79.2%
		Female Students		
Below	1	80.1%	2	85.4%
On	10	80.9%	6	79.5%
Above	8	83.9%	16	80.7%

Covariates appearing in the model are evaluated at the following values: RAI Pretest = 74.904

Guided Reading Instruction

The researcher began this portion of the analysis by analyzing the Guided Reading Survey and guided reading instructional observations in relation to the third research question.

3. To what extent does a teacher's guided reading instruction change based on whether they use content-based reading materials as opposed to the use of literature-based guided reading materials?

Guided reading survey. This portion of the analysis investigated similarity and differences between the teachers' guided reading instruction based on self-reports from the survey. All five teachers reported spending 1½ to less than 2 hours for the reading instruction and of that time three of the five spend 25% to 49% of their reading time on guided reading instruction. Teacher B (Group L) reported spending 10% to 24% and Teacher C (Group L) reported spending 50% to 99% on guided reading. Four of the five teachers reported being fairly well-informed about guided reading instruction while Teacher C reported being very well-informed. Based on the initial survey, four teachers reported the primary purpose of guided reading was to provide demonstrations of skills, strategies, response, and/or procedures. Teacher D selected that the primary purpose was to provide interventions around scaffolded instruction for students. Based on the post-survey, Teacher C (L) and D (C) reported the purpose of guided reading was to facilitate a group response between students around a shared text.

All of the teachers started with four guided reading groups within their classroom but at the end of the study, Teacher C (L) adjusted to three groups. The number of days spent with each group varied for the teachers. Teachers B (L) and E (L) both spent two days per week with each group. Teacher A (C) met with guided reading groups three days per week; whereas, Teachers C (L) and D (C) met with groups four days per week. All five teachers reported having five or six students in each group. Based on the post-survey, Teacher C (L), who reported having three guided reading groups, also reported having four students in each group. In correspondence with the student level data, the change Teacher C made does not incorporate all students into guided reading groups. The next question showed a great deal of consistency across the grade level. All five teachers reported placing students into groups homogeneously by developmental level but Teacher E (L) adjusted during the study to group homogeneously by need. At the start of the study, all five teachers reported using narrative text 50% to 74% of the time for guided reading instruction. The two teachers who used content-based guided reading materials (Teachers A & D) during the study reported on the post-survey using narrative text only 25% to 49% of the time for guided reading. The science-related materials selected by these two teachers during the course of the study were predominately expository text.

Table 8
Comparison of Materials from Survey

Teacher	Pre-Survey	Both Pre & Post	Post-Survey
A	Poems	Trade books A to Z books	Science readers Social Studies readers
B	Trade books Newspaper Magazines Poems		*Post Survey not provided*
C	Basal supplements Trade books A to Z books Science readers Social Studies readers Poems	Basal textbook Trade books	Poems
D		Basal supplements Trade books A to Z books Social Studies readers	Science readers
E		Basal textbook Basal supplements Trade books	Newspapers Poems

Looking in depth at the survey and comparing the materials used prior to beginning the study and then after the study was completed, there were some interesting findings. Many of the teachers incorporated similar materials into their guided reading instruction such as trade books and the leveled readers from www.readinga-z.com (A to Z books) and the basal supplemental materials (Table 8). During the course of the study, Teacher A and D who both utilized science-related materials reported changes to their material usage to using science readers. Teacher C, who reported using a variety of materials prior to the study, reduced the material

choices used during the study and eliminated science and social studies readers from the material choices.

Observation. Guided reading observations were conducted in the classroom's natural setting during the reading/language arts block. The researcher entered the classroom during the time frame given by the teacher and sat in close proximity to the guided reading instructional session. The observer did not interact with the students or the teacher during the guided reading lesson.

Teacher A, who used content-related materials, conducted the guided reading lesson on a large carpet in the front of the classroom. Other students were working independently and did not interrupt the teacher's instruction. Six students were instructed during this session. The text used was a leveled informational book about elephants. The researcher noted that the students were below level readers. The text was expository in nature and connected to the science curriculum. The teacher used a timer for the session set for fifteen minutes. The focus of the lesson related to fact and opinion and the teacher modeled vocabulary strategies for using context clues and the glossary to discover word meaning. Based on the teacher's comments to the students during the session, the text had been introduced to the students the day before and had been read once by the students. The teacher asked the students to use post-it notes to flag words they had difficulty with. While students read the text independently, Teacher A checked in with two students. The students were having difficulty decoding the words in the text and the teacher assisted by asking the two students to break the word apart in order to decode it. One student did not know what

a word meant, Teacher A asked the student to "read around the word" and make a guess as to the meaning of the word. The student responded with a guess and then the teacher asked the student to look the word up in the glossary at the back of the book to check the definition. The teacher brought the students to attention and wrapped up the lesson. The group discussed with the teacher's direction about word meaning and strategies that worked for them when they read a word they did not understand. The students seemed to understand the modeled strategy and understood how to use the glossary. The group discussed words such as endangered and herbivore which the teacher connected to a previous science lessons. At the end of the session, the teacher asked the students to use the text about elephants to write fact and opinion statements from what they had read.

Teacher B, who used literature-based materials, met with five students at a rectangular table on the side of the classroom. The students observed appeared to be high achieving students. The text provided to the students was an expository passage from a released SOL test about the speed of a cheetah. The teacher had used this passage for all guided reading sessions during the observation week. The teacher's focus for the instruction with this group was on finding main ideas and details. The teacher modeled a note taking strategy of circling the main idea and highlighting the details related to that main idea. The teacher did not have the students preview the text and did not review any vocabulary words from the text prior to having them begin reading. The teacher listened to two students read and discussed the strategy of highlighting with those students. Students read independently and used their

highlighters. When finished reading, the students were instructed to answer the questions related to the passage. During the "after reading" portion of the lesson the teacher asked the students to discuss their highlighting and helped to connect the title with the main idea of the passage. Connections were made between main idea and the details associated with them. The teacher connected to the students' experience of running a mile in physical education class to the speed at which the cheetah runs. The science content terms adaptation, predator, and prey were also mentioned by the teacher but were not discussed.

Teacher C, a literature-based instructional teacher, was not observed. Several attempts by the researcher were made to observe guided reading groups without success. Teacher C was very accommodating and open to having the observation conducted in the classroom. Unfortunately, guided reading was not being conducted during all the researcher's attempts to conduct the observation. The teacher was out of the building, had a student teacher teaching a whole class lesson, was teaching whole group instruction during the observation attempts, or informed the researcher that they "had just finished" reading groups.

When the observer entered Teacher D's (content-based) classroom, a number of things were taking place. A special education teacher was meeting with a small group of students at a round table in the back corner of the classroom, students were working independently at their desks, and Teacher D was working with a small group of students at a rectangular table in an opposite corner of the classroom. The group comprised six, on level students who were reading a science-based guided reading

book titled "Salmon: A Link in the Food Chain." Each student had a copy of the expository text and had apparently read this text earlier in the week. The lesson strategy focused on using context clues to understand the vocabulary words and the teacher addressed finding bold or "dark" words in the glossary located in the back of the book. While the students were reading and worked on filling in a vocabulary crossword puzzle related to the text, Teacher D listened to all six students read independently. With the first student, the teacher had the student read aloud and discussed the use of context clues to understand the word meanings. The second student read aloud and the teacher asked questions about the text while making reference to adaptations. The connection to a different text about penguins was made by the teacher as well in relation to adaptations, a science concept. The third student had difficulty with decoding some of the more challenging words and the teacher asked the student, "Do you know what that means?" For the most part, the student was able to use the context to figure out the meaning of the words. For the fourth student, the teacher pointed to the words as the student read and discussed trouble words. This student had difficulty with finding words to go into the crossword puzzle. The teacher had the student use the table of contents in order to approximate where the word would be located in the text. The fifth student read aloud to the teacher and answered a few questions directed by the teacher. This student had difficulty with the crossword puzzle as well so the teacher made connections to the use of the glossary to find the definition of the words. The last student the teacher worked with read aloud to the teacher just like the other students. The teacher worked with this student heavily on

using context clues to understand the word meanings of unfamiliar words. The teacher brought the group together for discussion at the end of the lesson and made a number of connections including the effect on the food chain, science content vocabulary, and geography of the Chesapeake Bay. It was apparent that the text had a number of connections to other areas of the curriculum.

When the researcher entered Teacher E's classroom, the students were sitting on the carpet and the teacher was directing a read aloud to the class. The discussion involved fact and opinion. At the end of the whole group lesson, the students went back to their seats to begin working independently. The teacher, who chose to use literature-based materials, selected four students for small group instruction and directed them to come back to the carpet. The four students seemed to be below level readers. The teacher provided a copy of a SOL released test passage to each student. The teacher read the narrative passage aloud to the students as they followed along. The teacher stopped every so often and the students responded with the next word. The focus of the lesson was on reading and answering questions. The teacher directed the students to underline important parts of the question and to reread the passage to find the answer to the question. The students worked independently on the questions while the teacher checked in with each of the four students in the group. Teacher E assisted students individually to answer the questions. The focus of the lesson was maintained throughout the lesson. The structure of the lesson did not follow the guided reading format and seemed to be an intervention group instead of a guided reading group.

Chapter 5

Discussion

Teachers are faced with a variety of students each year. The students have different interests, motivations, and ranges of ability. A teacher must differentiate in order to meet the instructional needs of these students. Leading guided reading instruction in a small group setting provides students with exposure to a number of different types of text that can enhance their understanding of the content or provide for skill instruction to improve reading ability. With a plethora of factors that contribute to a child's understanding of the curriculum, conducting research in schools can be challenging. It is difficult to identify contributing factors that improve the success of student achievement.

Guided Reading Practices

Traditionally, teachers have used literature-based materials to provide differentiated instruction for students during guided reading sessions. These materials often include novels, leveled readers, and based on the literature (Duke, 2003), have focused mostly on narrative texts. Based on the data collected from the adapted guided reading survey, the instructional practices for the five teacher participants in this study were similar and followed many of the guided reading practices of Fountas and Pinnell (2001). The teachers provided small group instruction for students based on homogeneous groupings by reading level. The small group instruction observed followed the structure of guided reading practices. The teacher participants

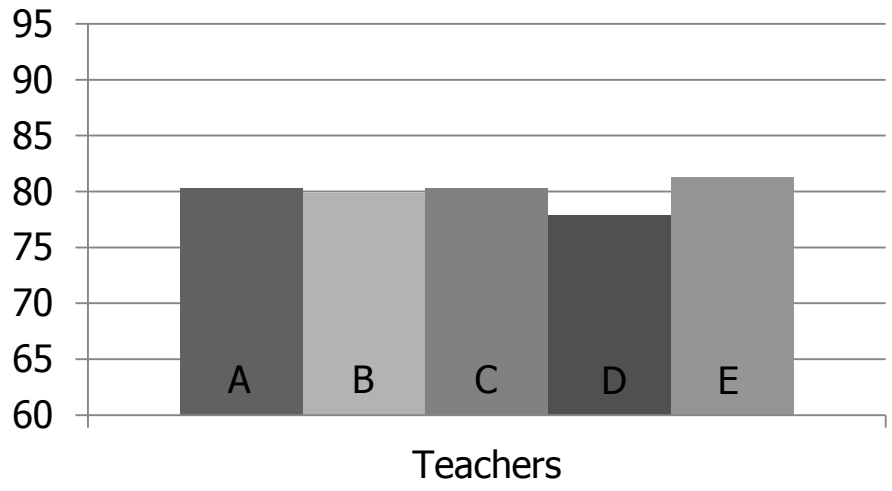
implemented small group instruction with a variety of texts including basal readers, short passages, leveled text, and novels. The teachers reported using both narrative and expository texts.

Based on the guided reading observations, teachers A and D (content) included all the components of guided reading instruction as described in Fountas and Pinnell's (2002) work. These teachers included the before, during, and after reading components with high fidelity. The use of content-based guided reading materials did not detract or take away from the implementation of these teachers' guided reading instruction. These teachers were able to provide differentiated instruction that focused on appropriate reading strategy work. During the observed small group sessions, teacher B and teacher E (literature) used SOL released test passages for their guided reading instruction. These materials and the corresponding instruction did not follow the guided reading format in its entirety. In a typical guided reading lesson, the teacher would focus on one strategy or skill and would utilize the text to facilitate that focus. The focus of the lesson for these two observations seemed to be on test preparation and dissecting the passage. Another key element of guided reading instruction is providing the students with leveled text that is suited for their instructional needs. The passages selected for these students were grade level text from a released SOL test. In a discussion with teacher B after the observation, she stated that she met with all of her small groups that day using the same passage. While this method of instruction provides the students with strategic instruction, it does not follow the structure of a guided reading lesson as developed by Fountas and Pinnell. The

observed lessons for teacher B and E would not be classified as guided reading instruction but may be better categorized as intervention or strategic instruction.

Reading Performance

Based on the RAI data, the reading performances for each teacher revealed no statistically significant results. Figure 7 shows the mean scores for the reading performance by teacher. It is apparent that the reading performances of the students across the grade level were fairly consistent among the five participating teachers. Teacher D, a content-related teacher, did have the lowest mean across the grade level; however, the difference was within two percentage points with the other teachers. This teacher was teaching a number of special education and low performing students. This shows that the interventions and guided reading practices of this teacher matched the students' needs because this teacher was able to get those students to perform at about the same level as the rest of the grade level. The use of content-related materials for the below level students benefited these students.



RAI covariates appearing in the model are evaluated at the following values: RAI Pretest = 74.116

Figure 7: *Reading Means by Teacher*

Overall, there was no statistically significant difference in academic performance for students in reading. The choice of materials and the utilization of content-related materials showed to be practical for student achievement and showed no indication of a negative effect on reading performance. Guided reading practices and differentiated instruction provides students with the necessary strategic intervention needed to perform on reading assessments. The materials used during guided reading instruction, whether content-based or literature-based, did not hamper or detract from the reading instruction of the teachers. The consideration for selecting materials should be based on the needs of the students and curriculum connections.

One might consider the duration of time between the pre- and posttest administrations as a factor as well. The school typically administers the RAI prior to SOL testing at the end of April or the beginning of May as the end of the year data

point. The post-test was administered at the end of the study which corresponded to the school's traditional testing window but did not adhere to the traditional beginning, middle, and end of the year testing practices. The school utilizes the SOL test scores as the end of the year indicators of performance. It is unclear if the RAI assessment is sensitive enough to show a great deal of change over time within the 12 week testing window administered at this school and for the data collection of this study. For future research, one might use another reading measure as the indicator for student performance which may provide greater information for analysis.

Science Performance

The two teachers who utilized content-related text did incorporate more informational text than the literature-based teachers. Based on the pre-survey data, all the teachers reported using 50-74% narrative text during guided reading. The two teachers who used content-related guided reading materials reported using 25-49% narrative text by the end of the study, whereas the literature group did not reduce their use of narrative text. The use of content-based guided reading materials appears to encourage teachers to use more informational text which fills the gap found by Duke (2000). When speaking to the teachers about their material choices, teacher A felt the students seemed more motivated to read the science-related text and "really enjoyed it".

The science comparison by material group revealed findings that are of practical interest to teachers' decision making. The teachers in the content group expressed

interest to continue utilizing these materials and found that the students seemed more interested in the texts. These data showed that below level students performed at higher levels for the content-related group for the LSA than that of their peers in the literature-related group. These results provide insight into the benefit of utilizing content-related materials. Both female and male, below level students benefited from having content-related materials and had higher scores on the LSA. The female below level students actually outperformed their on-level and above level peers for this assessment, which was unexpected. These students often have less background knowledge and have had less exposure to the vocabulary in the science content area. Providing reading materials that fill in the knowledge and vocabulary gaps these students have, has the potential to raise the performance bar for these students. When performance on standardized testing is so critical for schools, increasing below level student performance by seven or eight percentage points is practically significant to teaching. These results provided insight into one unit of science. It may beneficial to investigate the effects of these materials for an entire school year or for other units of study. Future research could also evaluate the use of social studies related guided reading materials to compare the use of materials from other areas of the curriculum.

Study Limitations

Due to the nature of this study, there were a few limitations and threats to internal validity which were minimized as much as possible. Students mature and learn at different rates and could therefore cause variability in the results, which was

addressed in the partioning of the data by reading level and gender. Teachers differentiate their instruction in efforts to meet their students' needs and abilities which should assist with this concern as well. Instrumentation could be a threat to internal validity because the PALS assessment was administered by individual teachers. Each teacher was trained to administer the PALS which should minimize the variance in having a number of test proctors. The inter-rater reliability results discussed previously in this chapter from the PALS technical manual support the reliability results using multiple proctors. Due to the autonomous nature of the elementary classroom setting and the learning process of the students, the subject effects should be minimized. The last expected limitation to the study could be implementation fidelity. Guided reading practices varied due to the reading levels and needs of the students. It is believed that all the teachers utilized proper guided reading practices to improve the reading ability of his/her students. The use of collaboration with colleagues and with the researcher assisted in minimizing this threat. The observation of each teacher's guided reading lesson was conducted midway through the study, which addressed the concern of implementation fidelity (discussed in Chapter 4).

The data for this study focused on one suburban elementary school in Northern Virginia, which limits the ability to make inferences about a more general population. The focus of this study includes all students who receive normal classroom instruction as well as guided reading instruction. Students with disabilities and students who are English Language Learners were included in the study due to the low number of students with special accommodations for this sample (n=6, 7.1% of the sample). The

results were isolated to this sample of third grade students in reading and science for the Living Systems and Life Processes unit only. Determinations of effectiveness for other content related materials or guided reading materials were not made in this study.

Conclusion

The initial consideration for this study was to investigate the impact of using content-related materials during guided reading and providing students with additional exposure to the science curriculum. The literature suggests that integration of science and reading together in the elementary school is beneficial for student performance (Fredericks, 2003; Stephens, 2010). The SOL essential knowledge also showed a great deal of connections in the skills required for both reading and science (Virginia Department of Education, 2003a & 2003b). The results of this study did show practically significant results between the two groups. The students who received content-related guided reading materials benefited from the additional exposure to the science content and the teachers increased their use of informational texts.

This study was limited to only one school including five teachers. The results are limited to the population of students who returned consent forms. A larger population of students from a variety of schools may reveal additional findings. Observation of the guided reading instruction provided a snapshot into the reading practices. More observations of this instruction could provide a more conclusive result into the justifications of these findings. Conducting educational research is very difficult

considering the school district's policies and the need to be non-invasive to the instructional time of the teachers. The factors that contribute to student performance and instructional success can be difficult to pinpoint as well. For future research, it is important to control for and observe as many factors of the instructional practices. As far as generalizability, these findings are only generalizable to populations and schools with similar instruction and students. One can consider the use of content-related guided reading instruction as an instructional practice that could be beneficial for the students. Based on the literature, this practice can provide additional exposure to the content, incorporate more informational text, and connect the skills of science and reading together. It may be necessary for teachers to have more professional development on using informational text for instruction as well as continue providing feedback on guided reading instructional practices. The findings from this study provide some results as to these benefits.

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Appendix A : Participant Consent Form

RESEARCH SUBJECT INFORMATION AND CONSENT FORM

TITLE: A COMPARATIVE ANALYSIS OF LITERATURE-BASED AND CONTENT-BASED GUIDED READING MATERIALS ON ELEMENTARY STUDENT READING AND SCIENCE ACHIEVEMENT

VCU IRB NO.:

SPONSOR: Virginia Commonwealth University

PURPOSE OF THE STUDY
The purpose of this action research study is to investigate the effectiveness of using content-related materials or literature-based materials during guided reading instruction to improve the knowledge acquisition and retention of third grade students and the effects that will have on reading achievement.

You have been selected to participate in this study due to your training and expertise with using guided reading instruction as well as the grade level involvement.

DESCRIPTION OF THE STUDY AND YOUR INVOLVEMENT
If you decide to be in this research study, you will be asked to sign this consent form after you have had all your questions answered and understand what you will be expected to do.

In this study you will be asked to utilize guided reading instruction in your classroom using either literature-based materials, which would include leveled readers, novels, and other narrative or expository texts or content-based materials, which will include both narrative and expository text that relates to the science curriculum for the Living Systems and Life Processes Unit. You will need to provide the researcher with assessment information for all students listed on your class roster, including PALS reading levels, RAI scores, and LSA scores. You will administer a pre-test and post-test for the Living Systems science unit. All data must be recorded accurately and using the standardized procedures of the assessment in order to ensure accuracy of the research findings. The guided reading instruction provided to your students will be in small groups based on the assessment data and student needs. The materials provided will fit the students' instructional level and instructional needs. During the course of this science unit, you have the freedom to teach in the style that best suits your students but you must use the designated materials (literature or content) for all guided reading instruction provided to your students. At the end of the unit, you will complete a short survey regarding your instructional practices used during the study.

RISKS AND DISCOMFORTS

If at any time during this study you are uncomfortable or have questions regarding your role in this research, please feel free to discuss these with the researcher.

BENEFITS TO YOU AND OTHERS
You may not get any direct benefit from this study, but, the information we learn from your participation in this study may help us design better programs for teachers and schools that will have an impact of student achievement.

COSTS
There are no costs for participating in this study other than the time you will spend in preparing for your guided reading instruction.

ALTERNATIVES
Your alternative would include not participating in this study. If you need assistance with data collection or other aspects of this study, contact the researcher to discuss personal concerns which can be addressed and adjusted if needed.

CONFIDENTIALITY

Potentially identifiable information about you will consist of data entry of your students and your name connected to those students, which is used for ease of the data entry process. The survey data will represent general information about your instructional practices. Data will be collected only for research purposes. Your data will be identified by teacher number codes and will include student information for each child that is in your class. The data will be stored on a flash drive which is kept by the researcher. All personal identifying information will be kept in password protected files and these files will be deleted after the data analysis has been complete. Other records, including PALS data, unit pre and post test data, RAI data, and survey data will be kept in a locked file cabinet for three months after the study ends and will be destroyed at that time. Access to all data will be limited to study personnel. A data and safety monitoring plan is established.

You and the principal of your school will be provided with a detailed description of the study findings; however, information from the study, information from your data records, and the consent form signed by you may be looked at or copied for research or legal purposes by the sponsor of the research, Virginia Commonwealth University. Personal information about you might be shared with or copied by authorized officials of Stafford County Public Schools, or the Department of Education (if applicable).

What we find from this study may be presented at meetings or published in papers, but your name and school name will never be used in these presentations or papers.

VOLUNTARY PARTICIPATION AND WITHDRAWAL

You do not have to participate in this study. If you choose to participate, you may stop at any time without any penalty. Your participation in this study may be stopped at any time by the study staff or the sponsor without your consent. The reasons might include:

- the study staff thinks it necessary for your health or safety;
- you have not followed study instructions;
- the sponsor has stopped the study; or
- Administrative reasons require your withdrawal.

If you leave the study before the conclusion of the research, your data will not be part of the findings and will be eliminated from the data analysis.

QUESTIONS

In the future, you may have questions about your participation in this study. If you have any questions, complaints, or concerns about the research, contact:

Dr. Valerie Robnolt

(804) 827-2649

vjrobnolt@vcu.edu

If you have any questions about your rights as a participant in this study, you may contact:

Office for Research

Virginia Commonwealth University

800 East Leigh Street, Suite 113

P.O. Box 980568

Richmond, VA 23298

Telephone: 804-827-2157

You may also contact this number for general questions, concerns or complaints about the research. Please call this number if you cannot reach the research team or wish to talk to someone else. Additional information about participation in research studies can be found at http://www.research.vcu.edu/irb/volunteers.htm.

CONSENT

I have been given the chance to read this consent form. I understand the information about this study. Questions that I wanted to ask about the study have been answered. My signature says

that I am willing to participate in this study. I will receive a copy of the consent form once I have agreed to participate.

Participant name printed *Participant signature* *Date*

_____

Name of Person Conducting Informed Consent Discussion / Witness [3]
(Printed)

_____ _____

Signature of Person Conducting Informed Consent Discussion / Witness Date

_____ _____

Principal Investigator Signature (if different from above) Date

Appendix B: Living Systems and Life Processes Assessment

Living Systems & Life Processes

Multiple Choice

Identify the choice that best completes the statement or answers the question.

_____ 1. Which of these shows a food storing behavior?

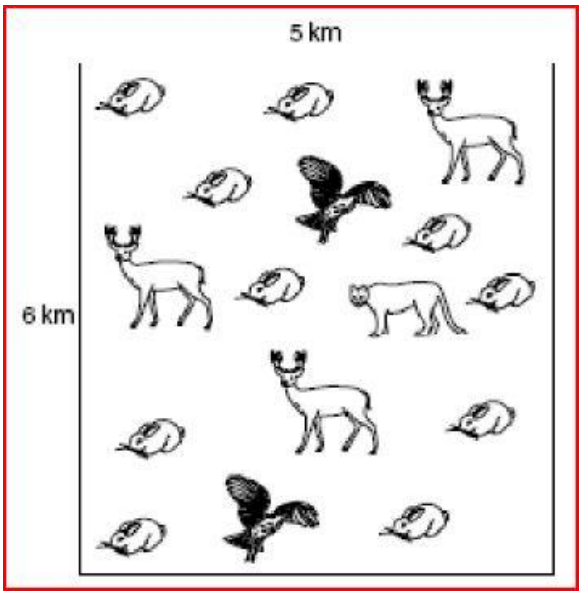
a. a dog barking at a cat
c. an ant carrying an ant larva to a new nest
b. a bird building a nest
d. a squirrel burying nuts

_____ 2. Bobby has a pet lizard that eats crickets and other insects. Which of these does NOT need to be in the lizard's cage?

a. air
c. clean water
b. plants
d. grasshoppers

_____ 3. When a tadpole grows, its gills change into lungs. What does it now need to survive?

a. air
c. soil
b. water
d. fins



____ 4. The picture shows a large area and the animals that live there. Which is the LARGEST population in this area?

a. mountain lion
b. deer
c. rabbit
d. hawk

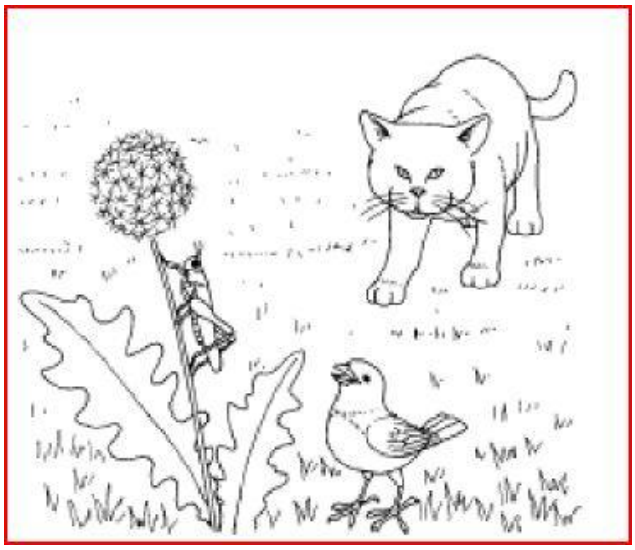
____ 5. Hibernation allows this animal to respond better within its habitat.

Hibernation is an example of a -

a. population
b. behavioral adaptation
c. physical adaptation
d. community

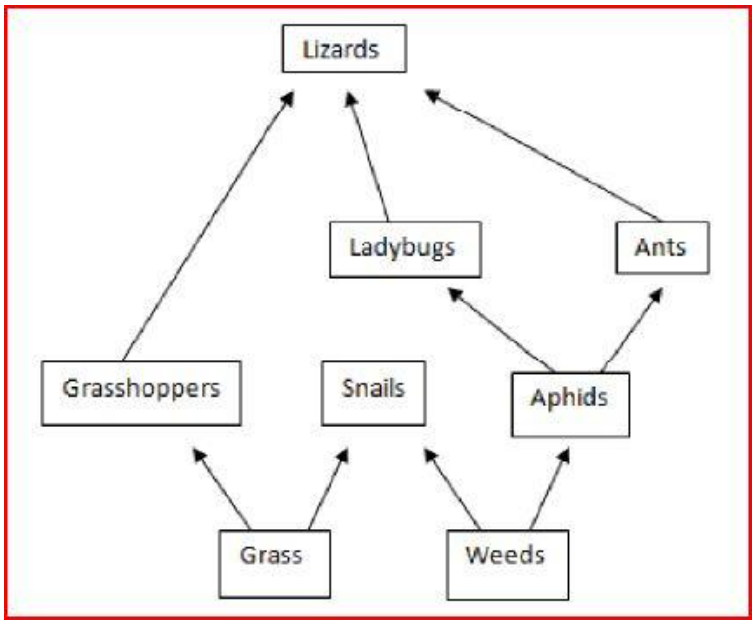
____ 6. Which of these do all living things need to stay alive?

a. soil
b. water
c. clothing
d. wind



____ 7. Which living thing produces its own food?

a. cat
b. bird
c. grasshopper
d. Dandelion plant



____ 8. Which of these animals eat Aphids?

a. grasshopper
b. lizards
c. snails
d. ladybugs

_____ 9. A lion is a consumer who preys upon other animals, such as hyenas and antelope. A lion is an example of a -

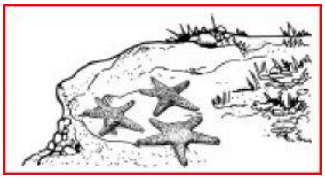
a. herbivore
c. carnivore
b. decomposer
d. ominivore

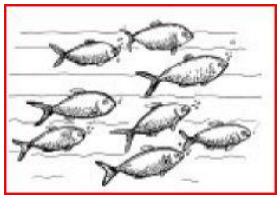
_____ 10. The following are characteristics of the rain forest EXCEPT

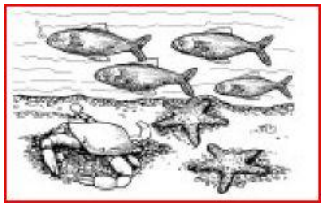
a. lots of precipitation
b. exotic animals such as the Toucan and Sloth
c. surrounded by lush vegetation and a vast canopy
d. large population of giraffes

_____ 11. Which picture shows an ocean community?

a. 

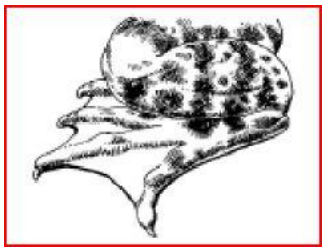
c. 

b. 

d. 

_____ 12. Which of these will cause an animal to hibernate?

a. heavy rains
c. cold weather
b. cloudy skies
d. longer days



_____ 13. This foot would MOST likely belong to a frog that lives in which habitat?

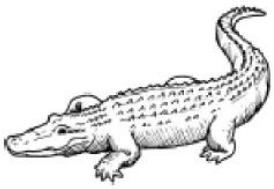
a. desert
b. grassland
c. forest
d. pond

_____ 14. Which of these animals is prey for frogs?

a. 

c. 

b. 

d. 

_____ 15. These living things are in a pond food chain. Which of these are producers?

a. Algae
b. Dragonflies
c. Frogs
d. Snakes

_____ 16. Some animals have the ability to blend in with their surroundings. This is known as -

a. camouflage
b. hibernation
c. migration
d. dormancy

_____ 17. People learn many things, but they do some things by instinct. Which of these is instinctive behavior?

a. swallowing food
b. turning off a television set
c. talking with friends
d. reading a book

_____ 18. This eagle has talons on the ends of its feet. Which do the talons help it do?

a. swim in water
b. eat insects
c. reach leaves high in trees
d. catch and carry prey

_____ 19. Which of these living things is a producer in a food chain?

a. Eagle

b. frog

c. grasshopper

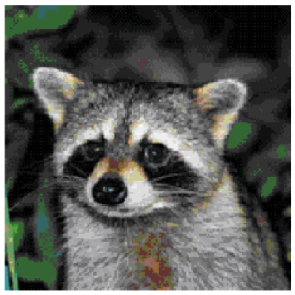
d. grass

_____ 20. In the food chain above, what will likely happen if all of the mice leave the area?

a. There will not be enough insects in the food chain.
b. The plants will increase in number.
c. Snakes will not have enough food.
d. The food chain will not be harmed.

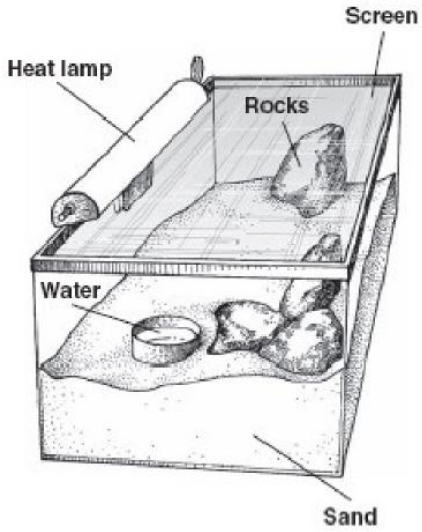
_____ 21. Which is a life need of a third-grade child?

a. food
b. friends
c. television
d. homework



_____ 22. Raccoons eat fish, berries, nuts, and green plants. The raccoon is -

a. a producer
b. an ominvore
c. a decomposer
d. a carnivore



_____ 23. This habitat is BEST for which type of pet?

a. lizard
b. butterfly
c. fish
d. bird

_____ 24. In which water environment might you see bears catching salmon?

a. ocean
b. pond
c. stream
d. swamp

_____ 25. A bee uses its stinger to -

a. attract other bees
b. carry food
c. protect itself
d. build its home

_____ 26. What type of animals would be found in the above environment?

a. forest animals
b. grassland animals
c. rain forest animals
d. pond animals

_____ 27. Which of these is a decomposer

a. mushrooms (1)
b. butterfly (2)
c. woodpecker (3)
d. pine tree (4)

_____ 28. Birds and some butterflies travel to warmer climates to avoid the cold weather in winter. This is an example of what type of behavioral adaptation?

a. hibernation
b. mimicry
c. migration
d. learned behavior

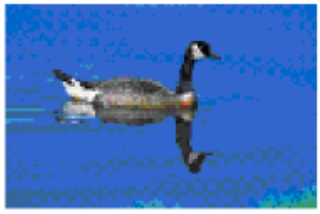
_____ 29. Which of the following is a learned behavior?

a. a cardinal building a nest

b. a squirrel looking for nuts

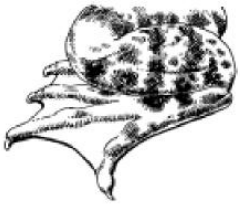
c. a dolphin jumping through a hoop

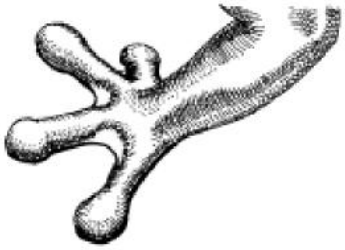
d. a goose flying south for the winter

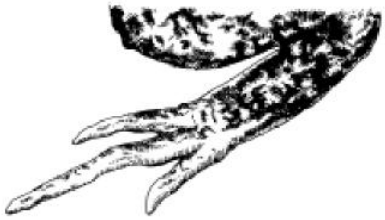


_____ 30. Which type of frog foot is best adapted for swimming?

a. 

c. 

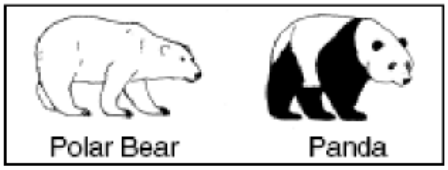
b. 

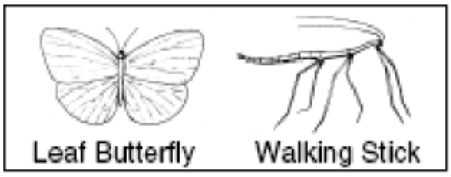
d. 

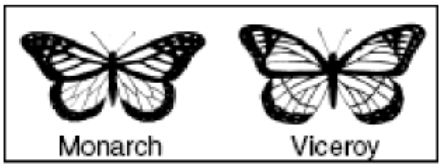
_____ 31. If an organism depends on other organisms for its food supply, it is called-

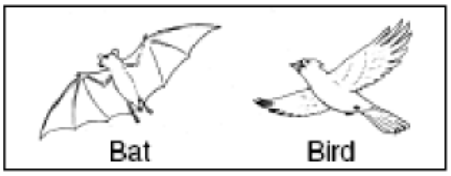
a. a consumer
b. a producer
c. an herbivore
d. a decomposer

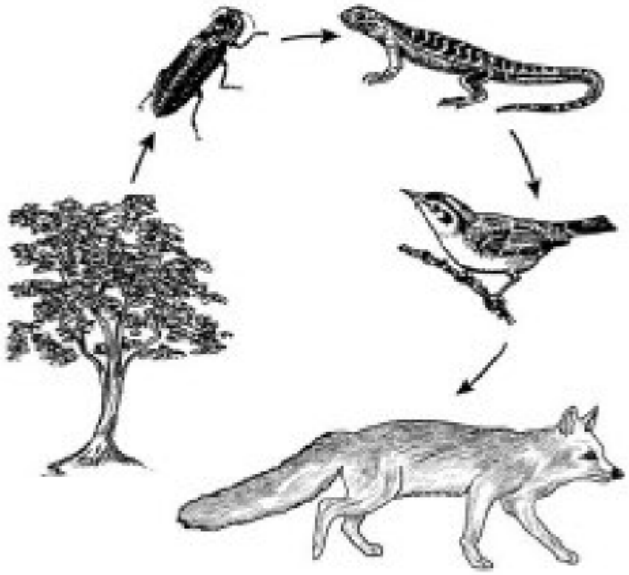
____ 32. Which box shows an animal that mimics the other animal for protection?

a.


b.


c.


d.




____ 33. This food chain is MOST likely to be found in what type of environment?

a. a stream
b. a marshland
c. an ocean
d. a forest

_____ 34. In which habitat could you find a salt water shark?
a. pond
b. ocean
c. lake
d. fresh water river

_____ 35. Cows are farm animals that eat only plants. Which of these kinds of living things is a cow?
a. decomposer
b. herbivore
c. carnivore
d. producer

_____ 36. A wetland habitat can continue to support the birds and fish that live there if people.
a. drain the water away
b. flood the highest parts of the land
c. leave the land alone

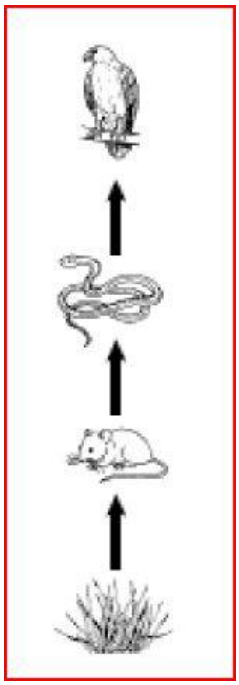
d. use the land for planting crops

____ 37. Which of these would probably cause a forest habitat to become a desert?

a. no rain
b. flooded rivers
c. high winds
d. hot summers

____ 38. Green Sea turtles lay their eggs on the beach and return to the sea. Tiny turtles hatch from eggs and find their way to the ocean. This is an example of -

a. a learned behavior
b. an instinct
c. camouflage
d. mimicry



____ 39. The snake in this food chain is a predator because it

a. eats other animals
b. is eaten by the hawk
c. is the largest animal
d. eats only plants

Living Systems & Life Processes
Answer Section

MULTIPLE CHOICE

1. ANS: D	PTS: 1	STA: 3.4
2. ANS: B	PTS: 1	STA: 3.5
3. ANS: A	PTS: 1	STA: 3.4
4. ANS: C	PTS: 1	STA: 3.6
5. ANS: B	PTS: 1	STA: 3.4
6. ANS: B	PTS: 1	STA: 3.5
7. ANS: D	PTS: 1	STA: 3.5
8. ANS: D	PTS: 1	STA: 3.5
9. ANS: C	PTS: 1	STA: 3.5
10. ANS: D	PTS: 1	STA: 3.6
11. ANS: D	PTS: 1	STA: 3.6
12. ANS: C	PTS: 1	STA: 3.4
13. ANS: D	PTS: 1	STA: 3.6
14. ANS: C	PTS: 1	STA: 3.5
15. ANS: A	PTS: 1	STA: 3.5
16. ANS: A	PTS: 1	STA: 3.4
17. ANS: A	PTS: 1	STA: 3.4
18. ANS: D	PTS: 1	STA: 3.4
19. ANS: D	PTS: 1	STA: 3.5
20. ANS: C	PTS: 1	STA: 3.5
21. ANS: A	PTS: 1	STA: 3.4
22. ANS: B	PTS: 1	STA: 3.5
23. ANS: A	PTS: 1	STA: 3.6
24. ANS: C	PTS: 1	STA: 3.6
25. ANS: C	PTS: 1	STA: 3.4
26. ANS: B	PTS: 1	STA: 3.6
27. ANS: A	PTS: 1	STA: 3.5
28. ANS: C	PTS: 1	STA: 3.4
29. ANS: C	PTS: 1	STA: 3.4
30. ANS: C	PTS: 1	STA: 3.4
31. ANS: A	PTS: 1	STA: 3.5
32. ANS: C	PTS: 1	STA: 3.4
33. ANS: D	PTS: 1	STA: 3.5
34. ANS: B	PTS: 1	STA: 3.6
35. ANS: B	PTS: 1	STA: 3.5
36. ANS: C	PTS: 1	STA: 3.6
37. ANS: A	PTS: 1	STA: 3.6
38. ANS: B	PTS: 1	STA: 3.4
39. ANS: A	PTS: 1	STA: 3.5

Appendix C: Guided Reading Survey
Name: _____
School: _____

Guided Reading material used: (circle one) Literature or Content

Please answer each question based on your practices utilized during the study.

1. How much time do you typically have each day for reading/language arts instruction?
   ___ Less than 30 minutes
   ___ 30-59 minutes
   ___ 1 to less than 1½ hours
   ___ 1½ to less than 2 hours
   ___ 2 hours or longer

2. What percentage of the instructional time you spend on your reading program is devoted to guided reading?
   ___ Do not devote any time to guided reading
   ___ 1% to 9%
   ___ 10% to 24%
   ___ 25% to 49%
   ___ 50% to 99%
   ___ Guided reading is the only element in your reading program

3. How would you rate your knowledge base of guided reading instruction?
   ___ Very well-informed
   ___ Fairly well-informed
   ___ Not very well-informed
   ___ Not at all informed

4. Which of the following best describes the primary purpose for your guided reading instruction?
   ___ To provide demonstrations of skills, strategies, response, and/or procedures
   ___ To provide interventions around scaffolded instruction for students
   ___ To facilitate a group response between students around a shared text
   ___ To facilitate a group response between students around multiple texts

5. How many guided reading groups do you typically maintain in your reading program?
   ___ None
   ___ 1
   ___ 2
   ___ 3
   ___ 4
   ___ 5 or more

6. How many days per week do you typically meet with each group?
   ___ Less than 1 day
   ___ 1 day
   ___ 2 days
   ___ 3 days
   ___ 4 days
   ___ 5 days

7. How long do you typically meet with each guided reading group?
   ___ Less than 10 minutes
   ___ 10 – 14 minutes
   ___ 15 – 19 minutes
   ___ 20 – 24 minutes
   ___ 25 – 29 minutes
   ___ 30 minutes or longer

8. How many students, on average, are in your guided reading groups?
   ___ 1 or 2
   ___ 3
   ___ 4
   ___ 5
   ___ 6
   ___ 7 or more

9. How are your students placed in guided reading groups? (Check all that apply)
   ___ Homogeneous by developmental level
   ___ Homogeneous by need
   ___ Heterogeneous
   ___ Homogeneous by other method (specify) _____

10. What percentage of the books chosen for use during guided reading are narrative stories only (as opposed to informational texts)?
    ___ None, use informational texts only
    ___ 1% - 24%
    ___ 25% - 49%
    ___ 50% - 74%
    ___ 75% - 99%
    ___ 100%, use narrative stories only

11. How often do you use each of the following materials during guided reading? (Give an answer for each)
    Basal textbooks
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Supplemental basal materials
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Trade books
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Reading A to Z books
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Science Readers
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Social Studies Readers
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Newspapers
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Magazines
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Poems
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Other (specify) _____
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Other (specify) _____
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never
    Other (specify) _____
    ___ Always ___ Usually ___ Sometimes ___ Seldom ____ Never

Appendix D: Parent Consent Form

Dear Parents/Guardians,

My name is Christine Guns and I am a fourth grade teacher here at Anthony Burns Elementary. I am currently working on my PhD in Education and about to begin my data collection. As part of the requirements, I have to complete a research study in my field of interest. The third grade teachers at Anthony Burns have graciously agreed to help with my project. Now, I need your help.

Let's begin with the study. I am looking at investigating the use of guided reading materials and how these materials affect the way that students perform on tests. As teachers, we use many different types of materials to teach and improve students' reading achievement. Teachers use stories, books, and other materials that fit the students' needs. I have asked the third grade teachers to be in two groups. One group of teachers will use their regular guided reading materials as they have done all year. The other group of teachers will focus on infusing science-related materials into their guided reading instruction. The study will focus on how the students perform in reading and on a Living Systems Unit test. The teachers will be using the same instruction in science and will be using normal classroom instruction for guided reading. The study will focus on the materials used in guided reading and how that affects how students perform. The hope is to use this information to improve the instruction and materials we use as teachers. Teaching requires the best from us every day and finding the things that increase the students' success is a goal of every educator.

Confidentiality

Your child's name and other personal information, the school's name, and teachers' names will not be used or reported in the research. All participants will remain anonymous. The data will be kept by me on a personal flash drive and will be deleted once I have defended by dissertation and completed all the requirements for the PhD program.

Participation

In order to have your child participate in this research and have his/her data included in the study, you will need to complete this permission slip and return it to your child's teacher by **March 28th**. However, your child's participation is completely voluntary and will not affect the classroom accommodation in any way. There is no risk of harm or detriment to your child's education by participating in this study. There is no cost to have your child involved in this study and the information will be used to inform and improve instruction.

Contact

If you have questions or need more information, please contact me at 540-273-9995. You may also contact Virginia Commonwealth University Office of Research at 804-828-6772.

I appreciate your help in completing my research study and my dissertation. I appreciate your time and consideration in helping this process.

Ms. Guns

INFORMED CONSENT

Your child's name: _____ Teacher's name: _____

Your child's gender: ☐ Male ☐ Female

☐ Yes, I give my permission for my child to participate in the study and have his/her data released to Ms. Guns for the purposes of the above study.

☐ No, I would prefer not have to have my child involved in the study.

Parent signature: _____ Parent signature: _____
Date: _____ Date: _____

Researcher signature: _____ Date: _____

APPENDIX E: Guided Reading Observation Form

Teacher: _____ Date: _____

School: _____

Guided Reading material used: (circle one) Literature or Content

- Small Group Instruction: Yes ☐ No ☐
- Number of students in the group: _____
- Level of students: Below ☐ On ☐ Above ☐
- Materials being used: Literature ☐ Content ☐
  Narrative ☐ Expository ☐
- Time spent with group: Start _____ End _____ Total: ____ minutes
- Before Reading
  - Teacher models strategy: Yes ☐ No ☐
    - Strategy _____
  - Preview the text: Yes ☐ No ☐
  - Vocabulary Review: Yes ☐ No ☐
  - Teacher sets purpose: Yes ☐ No ☐
    - Purpose _____
- During Reading
  - Students read independently: Yes ☐ No ☐
  - Teacher checks in with readers: Yes ☐ No ☐
    - How many students? _____
- After Reading
  - Teacher maintains focus/topic: Yes ☐ No ☐
  - Teacher encourages discussion: Yes ☐ No ☐
  - Discussion incorporates higher level thinking: Yes ☐ No ☐
- Comments:_____
  _____

_____

_____

_____

_____

11/2011 v. 1

APPENDIX F: IRB Approval Letter

VCU Memo

Virginia Commonwealth University

Office of Research Subjects Protection
BioTechnology Research Park
BioTech One, 800 E. Leigh Street, #114
P.O. Box 980568
Richmond, Virginia 23298-0568
(804) 828-0868
(804) 827-1448 (fax)

DATE: March 15, 2012

TO: Valerie J. Robnolt, PhD
School of Education, Teaching and Learning
Box 842020

FROM: Elizabeth Ripley, MD, MS
Vice Chairperson, VCU IRB Panel B
Box 980568

RE: **VCU IRB #: HM14237**
Title: A Comparative Analysis of Literature-Based and Content-Based Guided Reading Materials on Elementary Student Reading and Science Achievement

On March 12, 2012, the following research study was ***approved*** by expedited review according to 45 CFR 46.110 Categories 5 and 7. This research involves children and is approved under 45 CFR 46. 404. The approval reflects the revisions received in the Office of Research Subjects Protection on March 12, 2012. This approval includes the following items reviewed by this Panel:

RESEARCH APPLICATION/PROPOSAL: None

PROTOCOL (Research Plan): A Comparative Analysis of Literature-Based and Content-Based Guided Reading Materials on Elementary Student Reading and Science Achievement, received 3/12/12, version 2, dated 2/27/12

- VCU IRB Study Personnel Roster, received 2/17/12, version 1, dated 2/10/12
- Measure: Living Systems and Life Processes, received 2/17/12, version 1, dated 2/10/12
- Teacher Assessment, received 2/17/12, version 1, dated 2/10/12
- Guided Reading Survey, received 2/17/12, version 1, dated 2/10/12

CONSENT/ASSENT (attached):

- Research Subject Information and Consent Form (Teachers), received 2/17/12, version 1, dated 2/10/12, 4 pages
- Parent/Guardian Informed Consent, received 3/12/12, version 3, dated 3/11/12, 1 page
- Waiver of Assent: All four conditions for waiver of consent have been met. See §45 CFR 46.116(d). The IRB Panel has waived all elements of consent.

ADDITIONAL DOCUMENTS: None

This approval expires on February 28, 2013. Federal Regulations/VCU Policy and Procedures require continuing review prior to continuation of approval past that date. Continuing Review report forms will be mailed to you prior to the scheduled review.

(Continued...)

The Primary Reviewer assigned to your research study is Ann Allen, PhD. If you have any questions, please contact Dr. Allen at aallen@richmond.k12.va.us; or you may contact Jennifer Rice, IRB Coordinator, VCU Office of Research Subjects Protection, at irbpanelb@vcu.edu and 828-3992.

Conditions of Approval:

In order to comply with federal regulations, industry standards, and the terms of this approval, the investigator must *(as applicable)*:

1. Conduct the research as described in and required by the Protocol.
2. Obtain informed consent from all subjects without coercion or undue influence, and provide the potential subject sufficient opportunity to consider whether or not to participate (unless Waiver of Consent is specifically approved or research is exempt).
3. Document informed consent using only the most recently dated consent form bearing the VCU IRB "APPROVED" stamp (unless Waiver of Consent is specifically approved).
4. Provide non-English speaking patients with a translation of the approved Consent Form in the research participant's first language. The Panel must approve the translated version.
5. Obtain prior approval from VCU IRB before implementing any changes whatsoever in the approved protocol or consent form, unless such changes are necessary to protect the safety of human research participants (e.g., permanent/temporary change of PI, addition of performance/collaborative sites, request to include newly incarcerated participants or participants that are wards of the state, addition/deletion of participant groups, etc.). Any departure from these approved documents must be reported to the VCU IRB immediately as an Unanticipated Problem (see #7).
6. Monitor all problems (anticipated and unanticipated) associated with risk to research participants or others.
7. Report Unanticipated Problems (UPs), including protocol deviations, following the VCU IRB requirements and timelines detailed in VCU IRB WPP VIII-7):
8. Obtain prior approval from the VCU IRB before use of any advertisement or other material for recruitment of research participants.
9. Promptly report and/or respond to all inquiries by the VCU IRB concerning the conduct of the approved research when so requested.
10. All protocols that administer acute medical treatment to human research participants must have an emergency preparedness plan. Please refer to VCU guidance on http:/www.research.vcu.edu/irb/guidance.htm.
11. The VCU IRBs operate under the regulatory authorities as described within:
    a) U.S. Department of Health and Human Services Title 45 CFR 46, Subparts A, B, C, and D (for all research, regardless of source of funding) and related guidance documents.
    b) U.S. Food and Drug Administration Chapter I of Title 21 CFR 50 and 56 (for FDA regulated research only) and related guidance documents.
    c) Commonwealth of Virginia Code of Virginia 32.1 Chapter 5.1 Human Research (for all research).

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Curriculum Vitae

Christine R. Guns

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Education

December, 2012, Virginia Commonwealth University School of Education
Ph.D., Educational Research and Evaluation, Richmond, Virginia

September, 2007, Strayer University
M.Ed., Educational Management, Fredericksburg, Virginia

May, 2004, West Virginia University at Parkersburg
B.A., Elementary Education, Parkersburg, West Virginia

Academic Appointments and Work Experience

Elementary School Classroom Teacher, *Anthony Burns Elementary School, Stafford County Public Schools, Stafford, Virginia.* Utilized researched-based instructional methods including guided reading, small group instruction, guided math and interactive note booking. Utilized classroom assessments to drive instructional decision making. Participated as a School Improvement Leadership team member, teacher mentor, and grade level lead teacher. Research projects for the school included qualitative analysis of teacher perspectives of school improvement plan, SOL data analysis, and an evaluation of instructional materials utilized for guided reading. Teacher of the Year Nominee.

SOL Analyst, *Hanover County Public Schools, Hanover, Virginia*. Provided extensive review of math SOL correlations for grade levels, schools, and district for student performance. Created scatterplots, school level analysis, and reports for school and district level staff. Presented mathematic SOL analysis to district staff leaders. Provided information and analysis regarding ethnicity code changes for the county.

Instructor, *Stafford County Public Schools, Stafford, Virginia*. Presented professional development workshops to teachers for all areas of the curriculum. Provided expertise in instructional strategies and approaches, new content materials, and grade level content.

Presentations

Guns, C. (2011). *The Use of Content-Based Guided Reading Materials to Improve Knowledge Retention in Science*. Paper presented at the Metropolitan Educational Research Consortium Conference, Richmond, Virginia.

Guns, C. (2011). *The Use of Content-Based Guided Reading Materials to Improve Knowledge Retention in Science*. Paper presented at the Virginia Educational Research Association Conference, Charlottesville, Virginia.

Professional Affiliations

Virginia Educational Research Association